



A Conversation on
Southern Energy



The 2009 Report on the Future of the South



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2009 Report on the Future of the South

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A Project of the Southern Technology Council

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Message from the Executive Director

Last fall, when I began working as the new Executive Director of the Southern Growth Policies Board, I joined an organization that for almost 40 years has brought Southern leaders together to tackle hard, complex issues with solutions based on information and constructive conversations. We are devoted to strengthening the South's economy and creating the highest possible quality of life for all Southerners.

Southern Growth spent the past year focused on energy. Our work augments an on-going discussion that Southern governors have been having on energy issues at the National Governors' Association, the Southern Governors' Association and with the Southern States Energy Board. Energy is one of the most important, and difficult, issues facing the South. H. L. Mencken framed the energy conundrum perfectly when he suggested that all simple solutions to complex problems are wrong.

Energy policy is frustratingly complex. If the problem could be solved simply by producing more energy, we would focus our American innovation prowess and entrepreneurial spirit and solve the problem. But as a nation we struggle with balancing our growing energy needs with policy debates that incorporate the economy, global competitiveness, environmental impact, national security, safety, regional differences, consumer costs, and personal freedoms.

Regardless of any changes in the supply mix, or efforts at energy efficiency, almost everyone agrees that global energy demand will rise significantly in the coming years, guaranteeing an ongoing debate. Estimates are that we will need something close to 50 percent more energy in the next 25 years.

Through our research and conversations with Southerners we have become convinced that there are no simple energy solutions, but there are solutions. We heard that people were confused and wanted more information that they could trust. We heard consistently that people believe that no matter what else we do there should be a big push for energy efficiency. We also heard that Americans are optimistic that we will find new ideas and new technologies that will lead to energy solutions.

In these tough economic times, the South finds itself in a unique position of high potential in both natural resources and people resources. It is a great time for Southern leaders to work together; to collaborate to position the South as a national leader in energy production, jobs, innovation, ideas, and cooperation.

Some of our greatest opportunities, as is usually the case in recessions, are where significant change is taking place. The economic downturn and the recent turnover in our national political leadership have resulted in transformational changes in our energy policy and public energy investments. Whether you agree or disagree with the changes, change can result in new opportunities. Many countries are competing to become global leaders in emerging energy technologies. The South has all the assets to compete for new jobs generated by the new technologies.

Over the years, Southern Growth has been the catalyst for dialogues about globalization, entrepreneurship, workforce evolution, educational excellence and this year, energy. Southern Growth is many groups of professionals and volunteers from across the South trying to convert conversations, calculations, and collaborations into actions that yield results.

This report is designed to help Southern leaders lead in our national energy discussions.

A handwritten signature in black ink, appearing to read "Ted Abernathy".

Ted Abernathy
Executive Director
Southern Growth Policies Board
tabernathy@southern.org

Executive Summary

Southern Energy Is Different

What would a Southern conversation on energy sound like? The conversation would be distinct, because we are different from the rest of the country. Business would be a louder voice here. The conversation would be inclusive and include public and private interests, because that is how the South does things, and how, in particular, Southern Growth does things. It would be about jobs, and how our actions would impact everyone as a whole.

The conversation would be about existing energy sources, as well as future energy sources, since the South's rich variety of energy assets is ripe for a multi-energy source strategy. It would take into account the region's energy strengths and individual characteristics. Some of the South's unique characteristics include:

- The South is rich in existing energy sources.
- The South has a different economy, geography and climate, impacting its energy sourcing and consumption.
- The South is rich in assets for alternative energies, especially biomass.

These differences are described below.

The South is rich in existing energy sources.

- Four of the ten states that export more energy than they import are in the South: Kentucky, Louisiana, Oklahoma, and West Virginia. As a region, we export energy, generating about 32 percent of U.S. energy, but consuming only about 27 percent. The exporting of energy outside the region brings billions of dollars into the South.¹
- The South produces a third of the country's electric nuclear power and about 28 percent of its coal, but has only 22 percent of the nation's population.²

The South has a different economy, geography and climate, impacting its energy sourcing and consumption.

- The South will always use more energy per capita than most other areas because of its hot, humid climate. For example, all Southern Growth states have more degree cooling days per year than California, with most of our states having 50 percent more days than California.³
- Many new and existing power generation technologies require water for cooling, processing, and other purposes. Future power plant locations could be determined by water resources, with most of the Southern states having advantageous water supplies.⁴
- The South's significant industrial base requires expanding electric supplies, and makes the region more economically sensitive to high increases in energy costs.
- Industry accounts for 37.5 percent of energy consumption, compared to 32.4 percent for the U.S., 23.1 percent for California, and 13.7 percent for Massachusetts.⁵
- In some states, including Alabama, Arkansas, Kentucky, Louisiana, and West Virginia, industrial consumption makes up more than 40 percent of energy usage.⁶

Southern Energy Differences

Rich in existing energy sources, some for export

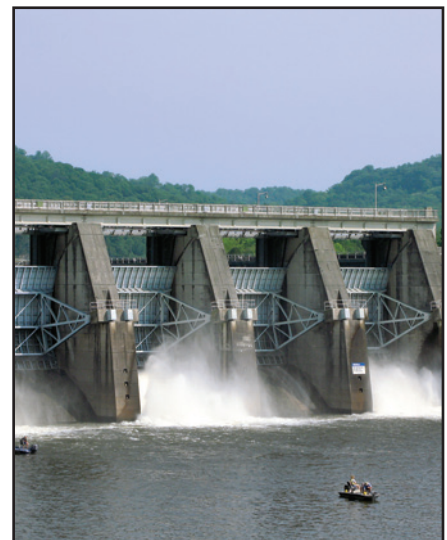
- coal
- nuclear

A different economy, geography, and climate impacting its energy sourcing and consumption

- hot, humid climate
- advantageous water supplies
- economic sensitivity to high energy costs due to significant manufacturing base

Rich in alternative energy assets

- plentiful biomass from plants, trees, and waste
- ample solar power
- several nationally ranked research centers



The South is rich in assets for alternative energies, especially biomass—energy from plants, trees, and waste.

- The South generates 46 percent of the nation's electricity from biomass, with Alabama, Georgia, and Louisiana leading the region.⁷
- The South holds 44 percent of the nation's energy in forestlands, 31 percent of the nation's energy in crop, mill, and urban waste residues, and 28 percent of the nation's energy in biogas.⁸
- The South has some of the lowest woodchip and pulpwood costs in the world today.⁹
- Although the South has only a few wind power resources, mostly along the coast and mountains, the South has ample solar power, with only 15 percent less solar power potential than the Southwest U.S.¹⁰
- The South has several nationally ranked research centers, including the BioEnergy Science Center at Oak Ridge National Laboratory.

However, the South also has liabilities.

- A national survey of state energy efficiency policies and programs ranked all Southern states in the bottom half of states, with almost a third of Southern Growth states ranking in the bottom 20 percent.¹¹
- The South imports almost 94 percent of its ethanol (automotive fuel from plants and waste) — fuel that could be produced here to increase agriculture and industrial jobs.¹²
- The South received only 3.5 percent of the nation's venture capital in the clean energy economy between 2006 and 2008. Almost a third of our states received *no* venture capital in this industry over that time period. Only Georgia received more than one percent of the nation's total. The South will not be a significant player in alternative energy without dramatically improving its venture capital situation.¹³ (see table on page 9)

The point: Southerners view energy differently because our situation is different—as all regions of the country are different with respect to their resources and history. Any energy policies need to reflect these differences in order to be a good fit for the South.

Energy *is* Economic Development



Energy *is* economic development, and always has been. The economic history of Western civilization rests on the back of increased productivity through energy innovation. From human brawn, fire, animals, wind, coal, water, oil, nuclear, solar, biofuels—humans have used energy to extend their reach through the mechanization of basic human activities such as procuring food, moving from one place to another, and building shelter.

Few industries have the global impact of the energy industry. *The Economist* estimates that the energy industry accounts for one dollar out of every ten generated in the global economy, and heavily affects the other 90 percent. The United States is one of the largest producers, and the largest user of energy. It is the third largest producer of oil and its largest importer. It is the number one producer and consumer of electricity.

The American economy currently runs on comparatively cheap energy. U.S. gasoline is routinely one-third to one-fourth of the European cost and half the Japanese.¹⁴ In 2006, electricity in the U.S. cost 10.4 cents per kilowatthour for households and 6.2 cents for industry, compared to 17.8 and 11.7 in Japan, and 22.2 and 9.4 in Germany. Inexpensive energy costs create both competitive advantages to industry and enhanced buying power for citizens.

Huge Opportunities in Alternative Energy¹⁵

Many sources point to a large and rapidly increasing alternative energy industry. Without current action, the South is at risk of not fully participating in this economically powerful sector.

- The renewable energy industry grew three times as fast as the U.S. economy in 2007, with the solar thermal, photovoltaic, biodiesel, and ethanol sectors showing 25 percent or more annual revenue growth.¹⁶
- The three major clean-energy sectors—solar photovoltaics, wind power, and biofuels—increased 53 percent, from \$75.8 billion in 2007 to \$115.9 billion in revenues in 2008.
- The demand for green products, already substantial, is growing rapidly. Consumers, buying products labeled environmentally beneficial, were expected to spend \$500 billion in 2008.¹⁷
- The renewable energy and energy efficiency (RE&EE) industries represented more than nine million jobs and \$1,045 billion in U.S. revenue in 2007.¹⁸
- The number of jobs in America's emerging clean energy economy grew nearly two and a half times faster than overall jobs between 1998 and 2007, according to a report by The Pew Charitable Trusts.¹⁹
- Some countries have successful alternative energy industries. More than half of Brazil's automotive fuel comes from ethanol (not including diesel). Denmark receives more than 15 percent of its electricity from wind. In China, 20 percent of the country's new hot water heaters are solar.²⁰



Rising Numbers of Clean Energy Jobs

The South has substantial growth in clean energy businesses and jobs. The South has 18.5 percent of the nation's clean businesses and 17.2 percent of the nation's clean jobs. The South's growth rate in jobs is higher than the national average, 12.9 percent from 1998-2007 versus 9.1 percent for the nation. The South also has a higher rate of increase of clean jobs compared to overall job growth, with the South's clean jobs increasing 2.93 times the overall job growth and the nation increasing 2.46 times.²¹

Certainly some of the growth numbers in jobs and businesses comes from reclassification of existing workforce and companies as clean energy. Still, the growth demonstrates that the clean energy industry is growing and the South has shared and can share in this growth.

Public and Private Investment Represents Opportunity

Public and private sources are pouring billions of dollars into the energy industry and every Southern state needs to participate in this investment.

The federal investment in energy R&D is growing dramatically.

The federal government, long a supporter of research in this area, is increasing its investments.²²

- In 2007, federal investment in energy R&D was \$2.8 billion, with renewable energy investment increasing more than four times since 1999.
- Stimulus funding from the Department of Energy includes \$2.5 billion for applied research, development, demonstration and deployment of advanced energy technologies. Almost half of this is dedicated to biomass and geothermal projects.

Fossil energy projects also received stimulus funds.

- \$1.52 billion for carbon capture and energy efficiency competitive grants.
- \$1 billion in R&D.
- \$800 million for clean coal initiatives.

The federal investment in alternative fuels is also growing.

The American 2009 stimulus bill includes more than \$70 billion in direct spending and tax credits for clean-energy and transportation programs, representing the largest federal commitment ever for renewables, advanced transportation, and conservation. Investments include:

- \$20 billion in tax incentives and credits for renewable energy, plug-in hybrid vehicles and energy efficiency.
- \$11 billion for “smart grid”—the computerization of the electrical power infrastructure.
- \$9.3 billion for high-speed rail.
- \$8.4 billion for mass transit.
- \$6.3 billion in state energy efficiency and clean energy grants.
- \$6 billion for loans for renewable energy projects.
- \$5 billion to weatherize homes owned by moderate-income people.
- \$4.5 billion for more efficient federal buildings.
- \$2 billion in grants for advanced batteries for electric vehicles.

Other policies support the growth of American clean-energy sectors, including:

- An eight year extension for the investment tax credit for solar.
- A three year extension for the production tax credit for wind.
- Utilities can participate in investment tax credits for the first time.
- Energy developers to receive up to a 30 percent government grant instead of a tax credit.

We need to increase conservation...increase energy efficiency...increase the use of alternative and renewable fuels...increase our use of nuclear power – and increase drilling for oil and gas here at home. We believe that Americans can do anything – and if we unleash the innovative spirit of our citizens, we can achieve energy independence.

Governor Bobby Jindal, Louisiana

Private investment in energy is also expanding.

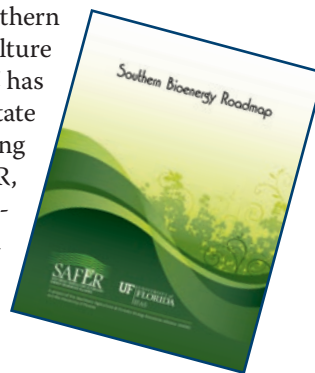
New global investment in clean energy technologies expanded by 4.7 percent to \$155.4 billion. American private investment in renewable energy capacity was \$71 billion in 2007.²³

As previously mentioned, the South received a disappointing 3.5 percent of the nation's venture capital in clean energy companies from 2006-2008. Only Georgia received more than one percent of the nation's total. The South will not be a significant player in alternative energy without dramatically improving its venture capital situation.

Energy Initiatives Around the South

Nearly all major Southern policy organizations have responded to the opportunities in energy markets.

- ▶ Southern Growth's activities are centered in its Southern Technology Council (STC) and the Southeast Agriculture and Forestry Energy Resources Alliance (SAFER). STC has produced five recommendations for expanding interstate cooperation to promote the biofuels industry, including regional signage and centralized permitting. SAFER, in conjunction with the University of Florida, has produced the *Southern Bioenergy Roadmap*, which found that "the South has abundant natural resources and intellectual capital to produce electricity and automotive fuel from plants, trees, and waste, also known as biomass."
- ▶ The Southern Governors' Association (SGA) is also grappling with environmental and energy policy issues. Under the direction of its Chairman, Governor Tim Kaine of Virginia, SGA has commissioned a regional assessment of potential climate change mitigation actions in the South, and their impacts on energy supply and demand. SGA's 2009 annual meeting will discuss climate change, energy, and national security issues, and also delve into smart grid technologies and transportation.
- ▶ Last October's annual conference by the Southern Economic Development Council—*Energy Driven Economic Development*—focused on the presidential election, economy and energy. Speakers advised economic developers to play a role in energy efficiency and energy projects. Other topics included the future of power generation and transmission in the South, and recruitment of energy-based companies.
- ▶ The Southern States Energy Board has long focused on developing collaborative energy projects and policies in the South, with projects in biomass promotion, carbon capture and sequestration, and state best practices. In 2006, the Southern States Energy Board released the *American Energy Security Study*,²⁴ which describes the national security and economic impacts of relying on oil from other countries. The study recommends incentives and other promotion mechanisms for increasing the use of alternative fuels from biomass, coal, and oil shale.



Southern Energy Recommendations

Continue to make conservation and efficiency top priorities

- Every energy unit saved means an immediate return on investment
- Everyone can participate in conservation and efficiency activities

Provide accurate information about energy production and its role in the economy

- People are hungry for accurate information that cuts through the “noise” surrounding the issues
- Accurate education and information will explain the relationship between energy, the economy, and jobs

Support multiple energy sources for short and medium-term energy needs

Examples include:

- Georgia: “...no single response can or will be sufficient.”
- South Carolina: leading research and development in hydropower while relying on nuclear
- Tennessee: placing bets on switchgrass and solar
- West Virginia: using both coal and wind power
- Missouri: nuclear and biofuel

What Do Southerners Think?

Part of the Southern conversation on energy is about listening. Over this last year, we have been listening to citizens, government officials, business people, and energy advocates of every perspective. Several recommendations emerged during this process.

1. Continue to make conservation and efficiency top priorities.

This theme bubbles up from nearly everywhere, from Southern Growth surveys and forums, to our region’s state energy plans. It is clear to see why: every unit of energy saved means less pressure for building new energy plants and an immediate return on investment. Everyone can participate in conservation and efficiency activities, from homeowners, to automotive plant engineers, to those responsible for heating and cooling state office buildings.

For example, since buildings account for 40 percent of the world’s energy use—more than transportation or industry—increased energy efficiency in buildings has a large impact on global energy consumption.²⁵

2. Provide accurate information about energy production and its role in the economy.

There’s a large amount of information “noise” surrounding energy issues. Consequently, people are hungry for accurate information about energy. *The Southern Bioenergy Roadmap*, for example, recommends the education of “...Southern leaders and the public (including farmers, foresters, and rural communities) on the economic and environment opportunities of biopower and biofuels.”

Recommendations from Southern Growth’s *Listening to the South* process include “Educate students and the broader public about energy issues.” At a community forum in Mississippi, the moderator stated that “Energy is probably last on the list of key concerns in this rural community.” Through education, we want to bump up energy as a concern and demonstrate the connections between energy, the economy and jobs.

A report, *Ending the Energy Stalemate: a Bipartisan Strategy to Meet America’s Energy Challenges*, acknowledges the difficulties of consensus on energy policies:

Equally important, Commissioners found common ground in rejecting certain persistent myths on the left and on the right that have often served to polarize and paralyze the national energy debate. These include, for example, the notion that energy independence can be readily achieved through conservation measures and renewable energy sources alone, or that limiting greenhouse gas emissions is either costless or so costly as to wreck the economy if it were tried at all. Most of all, Commissioners rejected the proposition that uncertainty justified inaction in the face of significant risks.

3. Support multiple energy sources for short and medium-term energy needs.

All energy plans from Southern states acknowledge a multi-energy source strategy. Georgia’s plan, for example, “recognizes the need for a combination of all resources with the assumption that no single resource can or will be sufficient.”

South Carolina is leading research and development in the hydrogen economy while relying on nuclear power. Tennessee is placing bets on switchgrass and solar. West Virginia has coal and wind power. Missouri has nuclear and biofuel.

This Report

The 2009 Report on the Future of the South: A Conversation on Southern Energy summarizes the opportunities for the South in the changing energy environment and the actions that can move us forward as a region to benefit from these changes. Our states have different starting points on this issue. Our mission is not to minimize these differences so much as to maximize the opportunities. The report includes the following parts of the Southern energy conversation:

- The *Listening to the South* section includes opinions from over 2,300 people in community forums, state policy meetings, and an online survey.
- The *Listening to the South's State Energy Policies* contains analysis of state energy plans and governors' State of the State addresses.
- Individual information on each Southern state's energy environment appears in the *State Energy Profiles* section, as well as composite information comparing the South to the U.S. in the *Southern Energy Profile*.
- Southern Growth's 2009 *Southern Growth Research Fellow*, Adam Saunders, chosen in a regional competition for student research projects, reports findings from a survey of over 150 stakeholders regarding state-level policies directed toward the promotion of woody biomass.
- The *Southern Innovators* are winners of a competition to acknowledge innovative green initiatives in the region.

The U.S. Clean Energy Economy

State	Clean Businesses	Clean Jobs	Clean Job Growth 1998-2007	Overall Job Growth 1998-2007	Venture Capital 2006-08 (thousands)	Venture Capital Percent US
AL	799	7,849	2.2%	1.6%	0	0.0%
AR	448	4,507	7.8%	3.5%	22,845	0.2%
GA	1,827	16,222	10.8%	15.7%	179,686	1.4%
KY	778	9,308	10.0%	3.6%	0	0.0%
LA	995	10,641	19.5%	3.0%	0	0.0%
MS	454	3,200	24.8%	3.6%	30,384	0.2%
MO	1,062	11,714	5.4%	2.1%	24,480	0.2%
NC	1,783	16,997	15.3%	6.4%	82,571	0.7%
OK	693	5,465	6.8%	2.4%	5,192	0.0%
SC	884	11,255	36.2%	2.2%	0	0.0%
TN	1,090	15,507	18.2%	2.5%	16,329	0.1%
VA	1,446	16,907	6.0%	6.6%	70,828	0.6%
WV	332	3,065	-4.1%	0.7%	5,741	0.0%
US	68,203	770,385	9.1%	3.7%	12,570,110	—
South	12,591	132,637	12.9%	4.4%	438,056	3.5%
South % of U.S.	18.5%	17.2%	—	—	3.5%	—

Based on Exhibit 1, *The Clean Energy Economy: Repowering Jobs, Businesses, and Investments Across America*, The Pew Charitable Trusts, 2009, http://www.pewcenteronthestates.org/uploadedFiles/Clean_Economy_Report_Web.pdf

Venture Capital Percent U.S., as well as Southern totals and percentages, calculated by SGPB.

Southern Energy Snapshot

15% Less Solar Potential than the Southwest

22% U.S. Population in the South

27% U.S. Energy Consumed

28% U.S. Coal Produced

28% U.S. Biogas Energy held by the South

31% U.S. Energy held in Crop, Mill, and Urban Waste by the South

32% Energy Exported to Other States by the South

33% Generated U.S. Nuclear Power

44% U.S. Forestlands' Energy held in the South

46% U.S. Electricity Generated from Biomass by the South

Listening to the South

Forum participants' top choices to capitalize on the economic opportunities associated with energy:

25% Conduct public awareness campaigns to encourage energy-saving investments by citizens and businesses

14% Encourage investment in energy-related research and development in the area's universities

11% Create a state or local fund to invest in green start-up companies

We started on it in the mid-70s but dropped the ball. In another 35 years we won't have the same options we do today.

– Community forum participant in Richmond, Kentucky

Like the community forum participant in Richmond, Kentucky, many Southerners came together to talk about energy issues out of some sense of urgency. Yet, others saw little relevance of the issue to their lives. Some saw it primarily as an environmental issue; others focused more on the economic aspects of energy and still others on national security. Some thought government should get out of the way and leave things up to the free market; others thought that relying on the free market to solve the energy problem was the problem – and that government should do more. Some favored more offshore drilling, while others wanted more attention focused on alternative energy research.

In all, more than 2,300 Southerners contributed their views to the 2009 *Report on the Future of the South*. Over 950 participated in 47 forums that were held in communities across the region, nearly 350 attended state policy dialogues in four states and an opening regional retreat in North Carolina, and over 1,000 shared their thoughts and priorities via Southern Growth's online survey.

Despite the broad range of discussion and opinions, five key themes emerged from these deliberations and are detailed below. Southerners told us that we need to:

- 1) Educate students and the broader public about energy issues;
- 2) Pursue a broad range of energy options;
- 3) Begin with energy conservation and efficiency;
- 4) Encourage research and development related to new energy technologies; and
- 5) Ensure that the workforce is prepared for emerging green jobs.

Educate Students and the Broader Public about Energy Issues

This area needs more employment opportunities. I had never thought about green businesses as being a way to create jobs.

– Participant in a community forum in Fayette, Alabama

Forum participants in Fayette, Alabama initially felt that it was important to conserve energy for future generations, but that there were other more important issues to be discussed – such as a lack of employment opportunities in rural areas. Yet, when presented with information on potential economic opportunities associated with the green economy, many saw new possibilities. Other communities had similar concerns. In Meadville, Mississippi, for example, the forum moderator observed that the group, overall, seemed uninterested in energy issues and did not see that they might have a direct impact on the community. Similarly, the moderator of a community forum in Aberdeen, Mississippi commented that “energy is probably last on the list of key concerns in this rural community.”



Others, such as forum participants in Beebe, Arkansas and Port Gibson, Mississippi, were skeptical of talk about the green economy, suspecting that it was just a fad that would soon blow over. There is a lot of misinformation out there, said participants in Martin, Tennessee, while those in Raymond, Mississippi felt that the media was steering the public towards “expensive, unproven technologies.”

To many, these and other signs point to a pressing need for a public awareness campaign to educate both students and the broader public about energy issues. Education is key said participants from larger cities such as Charlotte and Oklahoma City, as well as smaller communities such as Russell Springs, Kentucky and Mayhew, Mississippi.

There was a good deal of discussion at the Kentucky State Policy Dialogue about the need for education and public awareness campaigns on the topic of energy. In small group discussions there, more than half of the groups picked this as one of their top three priorities. Conducting a public awareness campaign around energy issues was also among one of the three top priorities identified by members of the Southeastern Universities Research Association,²⁶ who came together by phone in a “virtual” forum to talk about energy issues in the South.

Like forum participants in Mississippi State, Mississippi, many suggested beginning education efforts with young children, “so that it will be like second nature to them.” “Educating children about green living is vital, as it will produce long-term future societal change,” emphasized participants in Owensboro, Kentucky. Forum participants in Pikeville, Kentucky expressed concern that awareness of energy issues in schools was not only lacking, but was actually on the decline. A group at the Kentucky State Policy Dialogue recommended creating a new energy curriculum in public schools, focusing on how to save energy at home in grades P-3, introducing global energy issues in grades 4-6, and discussing green career pathways in grades 7-12. Younger generations are receptive to implementing green lifestyles, but they don’t necessarily understand the economic effects of energy efficiency, said forum participants in Oklahoma City. Balanced, thorough green education is crucial, they added.

Providing information on energy saving techniques and products was an idea mentioned in many quarters, although forum participants in Boone, NC observed that the Cooperative Extension Service had offered public programs there, but “no one comes.” They pointed to the need for a public education and awareness effort to convince individual and business consumers of the potential benefits of conservation as a first step.



“From wind to solar to ethanol and bio-fuels, Missouri is uniquely positioned to become a hub for exploration and expansion in alternative energy. By investing in Missouri workers and enhancing our infrastructure, we will create the energy jobs of the future, lead the way toward energy independence and turn our economy around.”

Governor Jeremiah W. (Jay) Nixon, Missouri



Forum participants suggested a variety of ways for reaching the general public: participants in Batesville, Arkansas raised the idea of forming a local committee to compile and disseminate information; participants in Martin, Tennessee discussed having a monthly forum at the University of Tennessee-Martin, focusing on a different energy issue each month; residents in Meadville, Mississippi mentioned articles in the weekly newspaper and roundtable discussions as possibilities; and a participant in Pittsboro, North Carolina noted his eagerness “to help organize a community energy awareness day (e.g. solar car races, science fair, essays, etc.).” A survey respondent from Virginia saw an outreach role for non-profits and institutes of higher education, calling on state government to “provide grants and technical assistance to non-profits and college systems to set up programs in local communities, so that they can promote the ‘Going Green Agenda.’”

The need to educate public officials and other decision makers was also raised. Forum participants in Leakesville, Mississippi, for example, felt that leaders needed to learn more about building a green economy. “Elected officials need to be better educated on green technology for informed legislation,” noted a forum participant in Huntsville, Alabama. “Mortgage lenders, utilities, real estate brokers and appraisers must become educated so energy efficiencies are considered part of the value of a home, not just granite countertops,” added forum participants in Boone, North Carolina. They also called for state legislation mandating that building inspectors receive continuing education in green building techniques so that they would be more likely to approve them. They noted that inspectors were not voluntarily enrolling in currently available training.

Pursue a Broad Range of Energy Options

Continue an aggressive “all of the above” energy concept without restricting any of the current options available to us.

—Online survey respondent from South Carolina

There was no clear agreement on a single course of action to solve the region’s – and nation’s – energy challenges. In fact, like the survey respondent from South Carolina, most recognized that one energy source or technology alone was not the answer. As an online survey respondent from North Carolina emphasized, “I believe we will need a broad range of options as none of the current options can be a solution to the entire problem.” “Energy supply is not a zero sum game,” echoed

“Oklahoma’s storied past in both the energy and agricultural industries positions our state to be a leader in renewable biofuels. Oklahoma’s ample natural gas and the winds that famously sweep across our plains make Oklahoma a prime location to produce wind power and usher in the CNG-fueled vehicle fleets of tomorrow.”

Governor Brad Henry, Oklahoma

another survey respondent from South Carolina. “We need to stop pulling down one form of energy to promote another. We need all forms of energy. Decisions should be based on economic facts and scientific knowledge. Let’s stop politicizing our energy future.”

There were clear differences in priorities by age group. While investment in alternative automotive fuels was the top priority for young survey respondents ages 24 and under, nuclear power was the top priority for those at the other end of the age spectrum (ages 55 and over).

A wide range of alternatives and ideas were discussed in community forums, state policy dialogues, and the online survey – from biofuels to battery technology, from wind power to geothermal power, and from renewable energy standards to carbon capture. Among those generating the greatest amount of discussion were:

Clean Coal Technology: Not surprisingly, coal was a major topic of discussion in Kentucky and West Virginia. We need to recognize that coal is a tremendous resource in the state and it would be a mistake not to utilize it, emphasized several discussion groups at Kentucky’s State Policy Dialogue. Exploring new technologies related to coal, including carbon sequestration, emerged as the top priority among Dialogue participants there. All five discussion groups at the West Virginia State Policy Dialogue saw coal as a priority as well. Recommendations included investing in research and commercialization of new coal-related technologies and developing a national campaign to improve public perceptions about coal. While discussion of the topic wasn’t as prevalent in other states, it was raised by others, including a survey respondent from South Carolina who expressed the opinion that, “Carbon sequestration is the key to our future.” “We need to increase effort in this area. Without it, we are limited in our choice of suitable energy sources for the next forty years,” he went on. Likewise, a respondent from Mississippi recommended developing “a viable energy policy/plan with strong emphasis on clean coal technology,” and a respondent from Tennessee stressed that “interesting things are happening in the coal industry and the U.S. has a lot of it.”

Nuclear Power: “Nuclear Power. It’s the future, baby,” said a North Carolina student responding to the online survey. “Build new nuclear power plants, which provide safe, emission-free electricity to the electric grid and are the most logical, dependable source to power revolutionary clean plug-in hybrid vehicles in the transportation sector,” recommended a survey respondent from Virginia. Others appeared to agree, with more than one in four survey respondents picking nuclear power as one of their top three priorities when asked where their state should direct its energy spending. More than one in eight picked nuclear power as their top choice, behind only alternative automotive fuels and alternative energy research. Nuclear power also emerged as the top priority among participants in a State Policy Dialogue in South Carolina, with eight out of ten discussion groups picking nuclear power as a strategy that they thought would have a big economic impact on the state. Similarly, all three discussion groups at the Missouri State Policy Dialogue selected nuclear power as a top option, where the potential for job creation appeared to add to the appeal. This is not to say that there were not some worries expressed. There was some disagreement over nuclear power among participants at a community forum in Montgomery, Alabama, for example, but in the end, most were





receptive to considering more up-to-date research information on nuclear power.

Solar Power: An online survey respondent from North Carolina was among those who praised the virtues of solar power. “The Sun comes up most every day. We have millions of square feet of available rooftops. Energy from solar panels gets used right where it’s generated. It does not go out onto an inefficient grid. It’s clean, available and creates jobs...Go Solar!” Solar power ran neck and neck with nuclear power in Southern Growth’s online survey, with nearly equal numbers selecting those two energy sources as one of their top three priorities for state investment. Many called for the provision of tax and financing incentives to encourage consumers to install solar panels and other devices.

Oil and Gas: “We can do more to encourage drilling for oil and gas in current reserves,” commented a survey respondent from Louisiana. “We are years away from widespread use of alternative energy sources. We will need the domestic oil and gas to supply the energy needs until alternate energy sources are more efficient and more widespread,” he explained. While oil and gas were rarely mentioned in community-level forums and were not a major focus at state policy dialogues, the need for more oil exploration was a recurrent comment among survey respondents, with more than one in ten respondents selecting “oil exploration” as one of their top three priorities for state action.

Begin with Energy Conservation and Efficiency

Some say that “all the low hanging fruit” has been picked in energy. However, I see a lot of low hanging fruit lying on the ground rotting. I think we need to begin focusing on better and higher fruit picking for energy efficiency and renewable energy for America’s energy future.

– Participant at Kentucky’s State Policy Dialogue

Energy conservation and efficiency were big topics of conversation and interest all around the region. For example, while coal and related issues dominated much of the discussion at the West Virginia State Policy Dialogue, when it came down to “placing bets” on where the state should put its energy investments, energy efficiency won the race. “Wholesale adoption of existing energy efficiency technology would eliminate foreign energy dependence,” said a participant in the Dialogue there. In the opinion of a forum participant in St. Louis, “Renewable energy should not be a focus until society has invested in efficiency efforts up to and through a ten year payback.” “It’s all about capital utilization,” he said. “Efficiency investments are the best use of capital at this current time, and the more investment there is in efficiency ultimately will reduce the need for renewable fuels.”

As a result of attending a community energy forum, many participants pledged to do more at home to work towards becoming more energy efficient. “Even though you may think that you’re only one person, you actually can make a difference in the world/community,” stressed a high school student who participated in a forum in Richmond, Kentucky. At the same time, many acknowledged the challenge of convincing consumers to make potential sacrifices – either in cost or convenience.

“Most people aren’t going to ‘be green’ if it hurts their wallets,” observed a student from North Carolina. Another online survey respondent from North Carolina went so far as to say that states should “concentrate on solutions that don’t depend on changes in behavior to have a positive benefit. While changing consumer behavior is desirable, we shouldn’t depend on it.”

“For a lot of the public, the bottom line is the controlling factor,” observed a forum participant in Morehead, Kentucky. Many cautioned that consumers were unlikely to make sacrifices when energy costs were low. “The South still has the lowest electric rates in the country, which makes it less likely for residents to take energy conservation issues too seriously,” warned a forum participant in Boone, North Carolina. Consumers are more likely to embrace going green if they see tangibles such as lowered bills or increased jobs, said forum participants in Oklahoma City. This challenge was illustrated by a comment made by a forum participant in Columbus, Mississippi, who said, “I will continue to use my lights and water because the electrical bill will remain the same.” Nor did college students at a forum in Hattiesburg, Mississippi have any confidence that conserving energy would have a broad impact on the community. Instead, they thought it would be more fruitful to wait for large companies to discover new breakthroughs that would address energy challenges.

The cost of what many called “going green” was singled out as a major roadblock. Going green is too expensive for low- to moderate-income households with the greatest need for efficiency cost savings, commented participants in London, Kentucky. The initial costs of going green are often cost prohibitive to individuals, even if they can see that there are long term benefits, agreed forum participants in Mayhew, Mississippi. “Being green costs money! With rising costs in every other area it’s hard to purchase green products,” added a forum participant in Mississippi State. Forum participants in Russell Springs, Kentucky and Columbus, Mississippi were among those that recommended low interest loans, vouchers, or other incentives to help consumers purchase energy efficient products. “Without subsidies to get the public to buy and get comfortable with these technologies, the companies offering these services can’t get effective economies of scale to lower the overall cost of the technologies,” elaborated a survey respondent from Alabama.

There was also discussion of enacting and/or improving net-metering regulations as an incentive for consumers to invest in solar improvements in particular, in that such metering would provide consumers with credit for any electricity they generated beyond their monthly use. “Enact net-metering regulations to encourage homeowners to use solar power,” recommended a survey respondent in Tennessee; “Institute fair net-metering,” said a respondent in Mississippi; “Implement effective net-metering regulations and interconnection standards that facilitate small, distributed renewable energy sources and level the playing field for the most cost-effective technologies,” suggested a respondent in North Carolina; “Drop the cap on energy that can be sold back,” reported a moderator about participant comments at the forum in Richmond, Kentucky.

Government should lead by example by adopting greener policies, said many of those contributing ideas to this report, including forum participants in Crossville, Tennessee and Cleveland, Mississippi. Using government as a model for energy saving practices was also identified as a key priority by





members of the Southeastern Universities Research Association. Forum participants in Maben, Mississippi saw “saving money for the town” as another key motivator for local government action. Forum participants in DeWitt, Arkansas wanted to start implementation of various forums of renewable energy in the schools – including biodiesel in buses, solar panels for a school greenhouse and small wind turbines on school grounds.

Others felt that people didn’t trust government and, therefore, more trusted organizations, such as churches, should be sought out as role models. “The general public thinks ‘green’ is just a gimmick and does not trust the message,” explained a forum participant in Boone, North Carolina.

A number of communities talked about providing recognition to businesses in order to encourage energy efficiency efforts. We need incentives for and recognition of companies who become the most energy efficient, said forum participants in Russell Springs, Kentucky. The state should reward businesses for energy efficiency, said those in Morehead, Kentucky. Provide small incentives for local businesses that implement energy efficient and environmentally friendly practices, said participants in Pikeville, Kentucky. Forum participants in Boone, North Carolina, Crossville, Tennessee and Joplin, Missouri were among those that talked about endorsing and promoting green-friendly firms as preferred providers of goods and services. At the same time, the Joplin participants cautioned against businesses that make a claim of being green, but are not truly implementing environmentally friendly practices.

Energy conservation and efficiency mean more than just changing to compact fluorescent light bulbs, emphasized many Southerners, interjecting topics such as growth patterns and public transit into the discussions. “Working on clustering or zoning rules that allow complimentary businesses to co-locate on brownfield sites can revitalize communities and promote energy efficiency and development of new products and industries,” commented a forum participant from Ruston, Louisiana. Forum participants in New Orleans also talked about the growing support for green building efforts there and the desire to capitalize on massive rebuilding efforts and new investment. A group of college students at Georgia Tech, holding an energy forum as part of a course on urban sustainability, talked about the difficulty in separating discussions of energy-related economic development from community planning. A community’s land use and housing patterns are going to directly affect energy conservation efforts because they will dictate residents’ daily commutes,

“West Virginia keeps our nation’s lights on. We are leading the way in the pursuit of the latest in clean coal technology and encouraging the development of alternative and renewable energy sources that will not only help improve the quality of our environment, but will create jobs and place the Mountain State at the forefront of this growing industry.”

Governor Joe Manchin, West Virginia

they pointed out. “Promote more energy efficient, walkable neighborhoods,” agreed a survey respondent from the same state. Forum participants in Newport News, Virginia talked about the need to update laws and building codes to encourage new energy efficient buildings as well as the retrofitting of existing buildings.

The need for more attention to public transportation was at the forefront of discussion at a forum in Richmond, Kentucky; among the proposed ideas was the development of an electric, high-speed rail system. Other communities also paid heed to this issue, albeit with more modest plans. “Increase public transportation, bike transportation and pedestrian opportunities. Make it easier for people to drive less,” contributed a survey respondent from South Carolina. “Shift funds away from ‘traditional’ energy consumption projects like new road construction toward more progressive and sustainable projects like public transit,” recommended a survey respondent from Georgia. “As far as public transportation, that is a HUGE issue in our state,” said a respondent from Alabama.

Encourage Research and Development Related to New Energy Technologies

Fund research.

– Online survey respondent from Oklahoma

Like the survey respondent in Oklahoma, many were short and to the point when asked what they thought was the most important thing their state could do to promote abundant and affordable energy. “Research!” and “Energy research” were two similarly succinct responses coming from survey respondents in North Carolina. Discussions at community forums and state policy dialogues elaborated on these responses, with many seeing a key role for the region’s universities in addressing energy challenges. In Ruston, Louisiana, for example, forum participants saw local universities serving as leaders in research as well as conduits for networking activities. Forum participants in Williamsburg, Virginia emphasized the need for extensive R & D funding, calling for a commitment equivalent to “putting a man on the moon.” Members of the Southeastern Universities Research Association pointed to many strong energy research efforts in the South, including the University of Georgia’s Biofuels, Biopower, and Biomaterials Initiative, Louisiana State University’s Center for Energy Studies, the University of Kentucky’s Center for Applied Energy Research, West Virginia University’s National Research Center for Coal and Energy, and the Virginia Coastal Energy Research Consortium.

“Addressing our country’s energy needs is both an environmental and a national security priority, and we’re working to make Tennessee a national leader in green energy technology and create higher skilled, good paying jobs. Tennessee is creating a business environment that encourages innovation and investment in the clean energy technology sector, and is well positioned to be a major player in many realms of alternative energy...”

Governor Phil Bredesen, Tennessee



Collaboration was a key theme. More partnerships need to be created between businesses and universities to foster energy as it relates to economic development, said community forum participants in Morehead, Kentucky. Participants in Richmond, Kentucky likewise called for collaboration among governments, business, educational institutions and energy providers in the region. The state must encourage collaborations between large and small energy companies and research incentives and follow through with R&D incentives, said forum participants in Oklahoma City. While recognizing the potential, the lack of an existing structure to facilitate collaboration among government, businesses and universities was raised as a potential roadblock to collaboration by forum participants in Newport News, Virginia. Finally, participants at Kentucky's State Policy Dialogue called for more multi-state information sharing and collaboration in energy-related research.

Ensure that the Workforce is Prepared for Emerging Green Jobs

Workforce training in emerging new industries is critical. [It] will attract industry to the region and produce high wage, green jobs.

– Community forum participants in Owensboro, Kentucky

More than 40 percent of those participating in community forums thought that preparing the workforce “with the new job skills needed in a changing energy environment” was one of the top three actions that should be taken to capitalize on the economic opportunities associated with energy; only “public awareness campaigns” received greater support from this group. Workforce development was highlighted at both the Kentucky State Policy Dialogue as well as at a number of forums in that state. Forum participants in Pikeville, for example, talked about the need to create degree programs in energy-related fields. They noted that the local community and technical college had a Coal Academy and recommended a complementary Energy Academy. Participants at the State Policy Dialogue called for the development of a certified green workforce, with the provision of educational incentives to encourage workers to pursue this career path.

The Missouri State Policy Dialogue also featured a good deal of discussion about workforce development issues. Participants pointed to a need to develop an industry-driven training consortium focused on energy. They saw a trained workforce as an underlying need for all other recommendations.

Given the emerging nature of alternative energy industries, Southerners saw opportunities for mutual learning in the area of workforce development. We need a repository of workforce development best practices in terms of training green workers, said community forum participants in Memphis, Tennessee, posing the question, “what else is working in the South?”

*Listening to the South's State Energy Policies*²⁷

Southern Growth Research Fellowship

Southern energy policies reflect the assets of the individual states. Southern states range from leaders in coal, oil and gas, to states with sizable technology resources for production of new fuels. No wonder Southern states have taken different routes to energy security.

An analysis of what states say about their energy future—in their official energy plans or governors' State of the State addresses—reveals that the differences between the states are matters of emphasis. Every state, for example, believes that renewable fuels will become important energy assets, although the states may disagree on the strategies to get there.

State Energy Plans

The presence of energy assets is a big factor in the existence, and nature, of state energy plans. States without published plans generally possess substantial conventional energy assets, especially in oil and gas.

According to the *Southern Bioenergy Roadmap*²⁸, about half of the Southern states have not developed official energy plans.

- These states arc from Alabama up through Missouri, and also include Arkansas, Louisiana, Mississippi, Oklahoma, and Tennessee.
- The states without plans generally possess substantial energy assets.
- Several of the states have large oil and gas resources.
- Two of the states—Louisiana and Oklahoma—export more energy than they import.²⁹
- Although Missouri does not have large oil and gas assets, it dominates in corn-based ethanol production.
- Although Tennessee does not have a state energy plan, the state has been among the most aggressive in investing in biofuels from non-food plants.

The Southern states with energy plans are Georgia, Kentucky, North Carolina, South Carolina, Virginia, and West Virginia. These states divide into two groups:

- The first group lacks substantial traditional energy assets, but are vying to become “techno-energy states”—states using existing technology assets to promote alternative energy. These states include Georgia, North Carolina, South Carolina, and Virginia.
- The second group consists of two states with large energy exports of coal—Kentucky and West Virginia—that have plans that emphasize clean coal technologies, as well as other energy strategies.

Although each energy plan is peculiar to its state, the plans have five common themes.

- Energy efficiency and conservation are critical first steps for energy plans.

Southern Growth Policies Board created the Southern Research Fellow program to involve undergraduate and graduate scholars in research related to the economy and quality of life in Southern Growth's 13 member states.

The 2009 Southern Research Fellow Program sought research proposals on regional economic opportunities relating to bio-products, alternative energy, and/or energy efficiency. Eligible applicants for the program included undergraduate and graduate students aged 18 - 25 at colleges and universities in the 13 Southern Growth member states. 2009 Southern Research Fellow Adam Saunders was selected from a large, competitive pool of applicants from across the South.

For his research, Saunders conducted an online survey of 169 stakeholders in the wood-for-energy sector, including federal and state foresters, heads of university forestry departments, and other representatives from the public and private sectors. Survey respondents were asked to evaluate four general policy tools and four specific state-level policies related to the development and management of wood-for-energy industries. Saunders presents findings of the survey respondents' perceptions of how various policies can meet certain criteria, highlights differences in the perceptions of Southern and non-Southern respondents, and offers specific policy recommendations based on the results of the survey.

To download the report, visit: www.southern.org/pubs/pubs_pdfs/Adam_Saunders_09ResearchFellow.pdf.



West Virginia states that “we can become 30 percent more energy efficient in all sectors by 2030.”³⁰ North Carolina recommends that “state agencies and universities reduce energy in existing state buildings by four percent a year or more for the next five years.”³¹

- Energy independence from imported oil is a critical security goal.

Although every state plan mentions energy as a national security issue, Kentucky and West Virginia especially plan to use their coal assets to be free of imported oil. West Virginia hopes to be free of imported oil by 2030. Kentucky summarizes it most succinctly: “The nation’s dependence on foreign energy supplies endangers our security.”³² Virginia, also with coal assets, wants to “increase energy independence with emphasis on conservation and clean fuel technology by reducing energy growth by 40% by 2017, as well as increase indigenous oil production by 20 percent.”³³

- All states acknowledge a multi-energy strategy.

Specifically, Georgia’s strategy “recognizes the need for a combination of all resources with the assumption that no single resource can or will be sufficient.”³⁴

- Several states commit to green house gas emission goals.

South Carolina recommends “a voluntary, economy-wide goal for South Carolina to reduce gross GHG (Green House Gas emissions) to five percent below 1990 levels by 2020...”³⁵ Virginia plans to “reduce greenhouse gas emissions by 30 percent by 2025, bringing emissions back to 2000 levels.”³⁶

- Several states see the turmoil in energy markets as an economic development opportunity.

North Carolina has a high priority action item that the “Department of Commerce and the State Energy Office should encourage and support economic development of energy-related enterprises whose products are intended to increase energy efficiency or use renewable resources...”³⁷ Virginia wants to “capitalize on economic development opportunities through business expansion and increased research and development in areas of strength, including alternative transportation fuels, nuclear technology, coast energy production, and carbon capture and storage.”³⁸ Georgia believes that “access to affordable and reliable energy is an important factor in the state’s prosperity and economic development.”³⁹

Individual State Energy Plans

Georgia’s Governor Sonny Perdue believes that “The recent energy price increases and volatility underscore the importance of an energy plan for the state and the interconnection between energy, the economy, and our natural resources.” Georgia has the goal of reducing “energy consumption in state facilities by 15 percent by 2020” and challenging “Georgia’s citizens, businesses, and local government to match the state’s effort.”

- The state plans to use “energy efficiency and conservation as a base” to accomplish its energy goals.
- Its “second priority is the use of renewable resources...”
- Its third priority is the use of “advanced coal, gas, and nuclear technologies.”

- The state “recognizes the need for a combination of all resources with the assumption that no single resource can or will be sufficient.”

Kentucky wants to be energy independent from foreign oil. To accomplish this by 2025, Kentucky’s plan has concrete goals in efficiency, renewables, and existing energy sources.

- Use energy efficiency to offset 18 percent of projected energy demand.
- Triple power generation from renewables to 1,000 megawatts.
- Get 12 percent of its motor fuels from biofuels.
- Transform coal into four billion gallons of fuels.
- Get 100 percent of its natural gas from in-state, augmented by coal to gas.
- Deploy carbon sequestration technology in 50 percent of coal-based facilities.



North Carolina has developed 93 policies and programs in categories such as Energy, Economics, and the Environment; Fossil and Nuclear Fuels; Electric Utilities and Energy Use; Alternative Fuels from Biomass; Alternative Energy Sources; and Energy Use in the Public Sector. The objectives of the energy plan are to:

- Ensure energy reliability;
- Improve public health and environmental quality;
- Develop policies that promote wise land use;
- Implement strategies for a sound economy;
- Develop an achievable sustainable energy strategy; and
- Implement a strategy by which the state can lead by example.

South Carolina emphasizes the connection between climate, energy, and commerce. The state’s energy initiatives support continued monitoring of progress in green house gas targets. The state’s objective is to “...reduce green house gas emissions and enhance energy and economic policy in South Carolina by 2020 and beyond” and its plan suggests over 50 specific policies, including the following key recommendations:⁴⁰

- Recommend a voluntary, economy-wide goal to “reduce gross GHG (Green House Gas) emissions to five percent below 1990 levels by 2020...”

“Georgia has the economic, technical and natural resources to lead the nation in the development of biomass energy. Through research and commercialization of renewable and clean energy technologies, Georgia will create economic opportunity and will secure a clean energy future for our state.”

Governor Sonny Perdue, Georgia



- Evaluate “the costs, savings, and feasibility of building and infrastructure efficiency to enhance energy and economic policy in South Carolina.”
- Review, update, and approve a “comprehensive inventory and forecast of GHG emissions in South Carolina from 1990 through 2020.”

Virginia sees the need to “overcome market, consumer-education, historical energy-costs, public policy, and institutional barriers” in order to meet its energy objectives. This will require a mix of public and private investments. The state’s goals, to be accomplished by 2017, include the following:

- Increase energy independence with emphasis on conservation and cleaner fuel technologies.
 - Reduce the growth rate of energy use by 40 percent.
 - Increase indigenous energy production by 20 percent.
- Expand consumer energy education.
- Reduce green house gas emissions by 30 percent by 2025.
- Capitalize on economic development opportunities through business expansion and increased research and development in areas of strength.

West Virginia wants to be an energy leader for the nation. The state has the goal of being free of foreign oil imports by 2030, displacing 1.3 billion gallons of oil with internal sources such as wind power, coal-to-liquids, and increased oil and gas recovery. The state emphasizes technology applications such as transforming coal into other energy sources and promoting carbon capture and sequestration.

In their own words, the energy plan says:

A long-term solution to our energy needs will involve a combination of all three energy opportunities areas: (1) enhanced production of fossil energy sources including advanced coal technologies; (2) renewable energy development; and (3) energy efficiency.

“In today’s economy, we can turn our energy challenges into an opportunity. Our goal is to position the Commonwealth as a leader in alternative energy generation, energy conservation, and research and development. By developing a green energy industry here, we will not only move towards a more environmentally responsible approach to addressing our growing energy needs, but we will also help stimulate Virginia’s economy.”

Governor Timothy M. Kaine, Virginia

State of the State Addresses⁴¹

State of the State addresses, usually delivered by governors after the first of the year, indicate governors' legislative priorities for the coming year. A review of the last three years of addresses from Southern governors shows that energy issues are lower priority compared to the "bread and butter" issues of jobs, education, and healthcare, which appear in every address. Energy was not mentioned in about a quarter of the addresses, even though this time period included the highest energy prices on record. Furthermore, when governors mentioned energy in their addresses, they often used vague terms without concrete proposals. The following themes arose from the governors who mentioned energy in the addresses:

- Almost half framed energy as an economic issue. For example, Governor Haley Barbour of Mississippi stated that "Being known as an energy reliable state will be a major economic development advantage in the future."
- Forty percent of governors referred to alternative or sustainable energy in their speeches. Governor Brad Henry of Oklahoma said that "Oklahoma is uniquely positioned to be at the forefront of a dynamic new age, an era that demands sustainable energy sources..."

As to specific areas within energy, the governors mentioned biofuels or renewable fuels about one third (31 percent) of the time—more than the mention of oil and natural gas (28 percent). Solar came in third, followed by coal, wind, and then nuclear.

- About a third of the governors referred to energy as a national security issue. Governor Mike Beebe of Arkansas called the reliance on imported oil "international blackmail."
- Incentives for bioenergy, as well as energy conservation, were mentioned about 25 percent of the time.
- Governors mentioned climate concerns and the high cost of oil and gas about one sixth of the time.



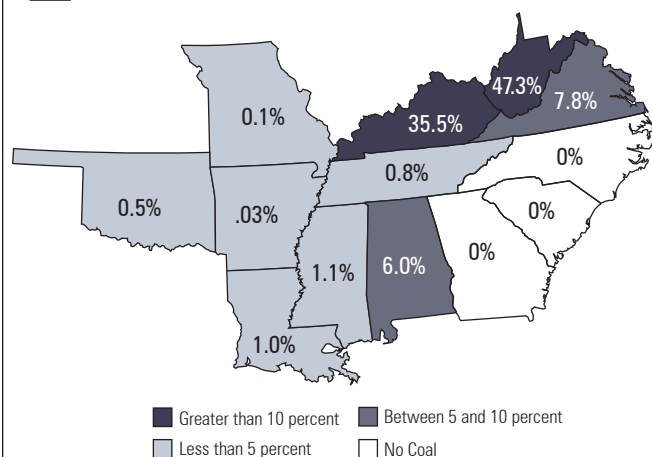
"Through the recent establishment of our Energy Plan, Kentucky is on the threshold of becoming the national leader for innovating and creating efficient, sound and environmentally compatible energy solutions and strategies. By conserving and using energy more efficiently and optimizing the use of renewable and alternative fuels, in addition to coal, we are poised to simultaneously create efficient, sustainable energy solutions and create a base for strong economic growth."

Governor Steve Beshear, Kentucky

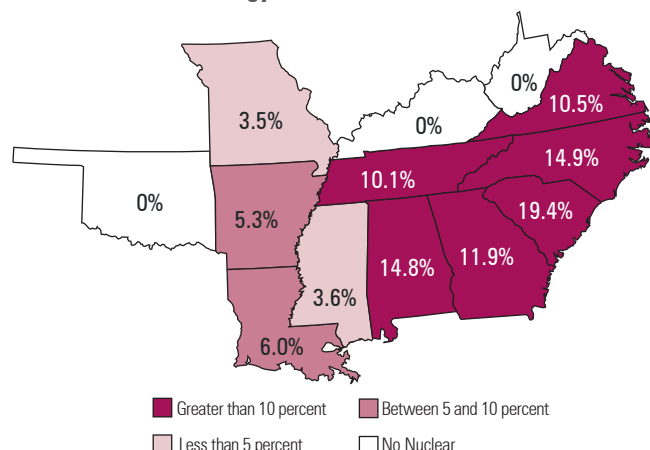
State Contributions To Total Southern Energy Production



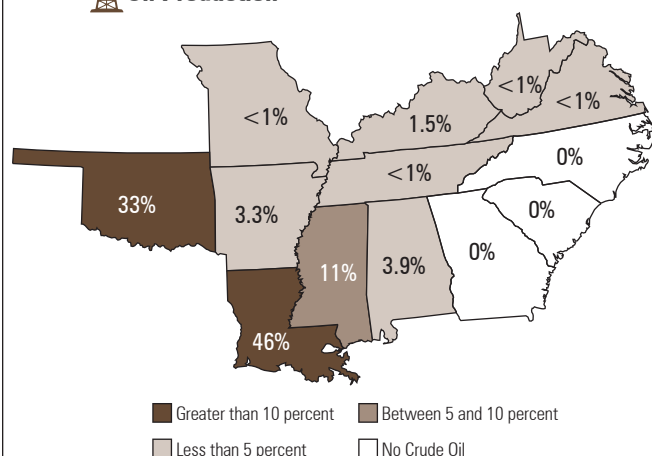
State Contributions to the South's Production of Coal⁴²



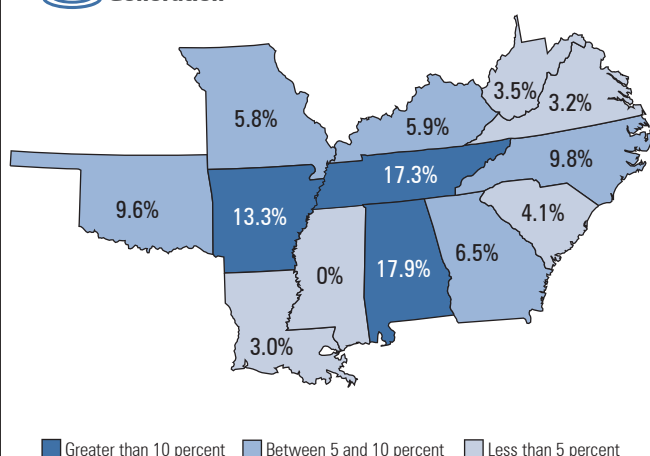
State Contributions to the South's Generation of Nuclear Energy⁴⁵



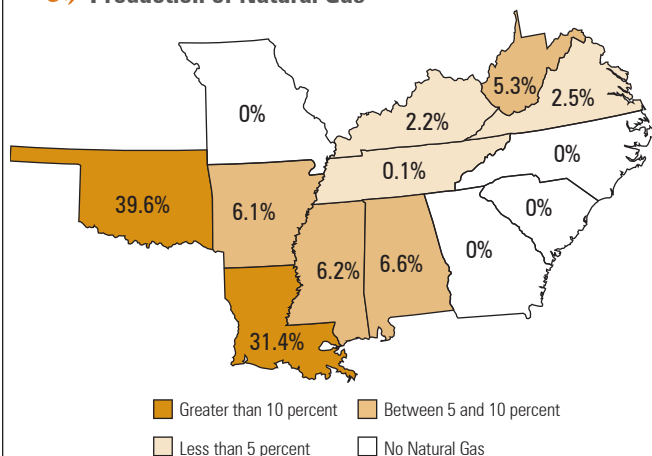
State Contributions to the South's Crude Oil Production⁴³



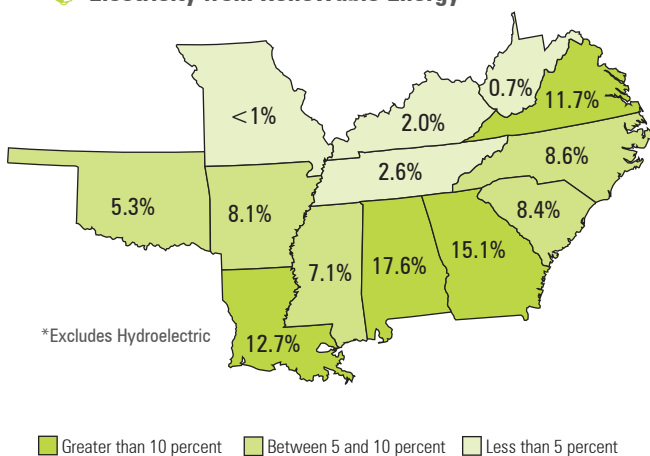
State Contributions to the South's Hydroelectric Generation⁴⁶



State Contributions to the South's Withdrawal and Production of Natural Gas⁴⁴



State Contributions to the South's Generation of Electricity from Renewable Energy^{*47}

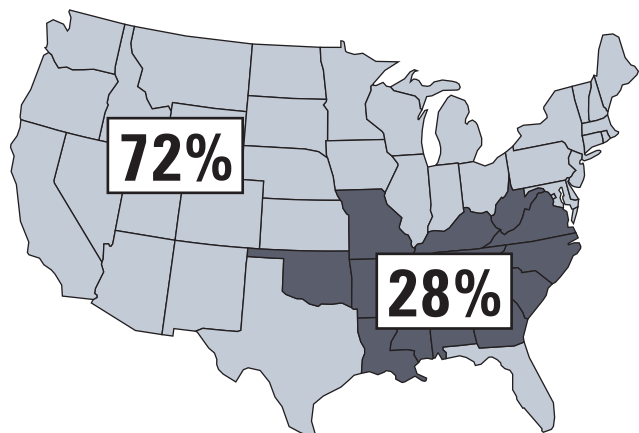


*Excludes Hydroelectric

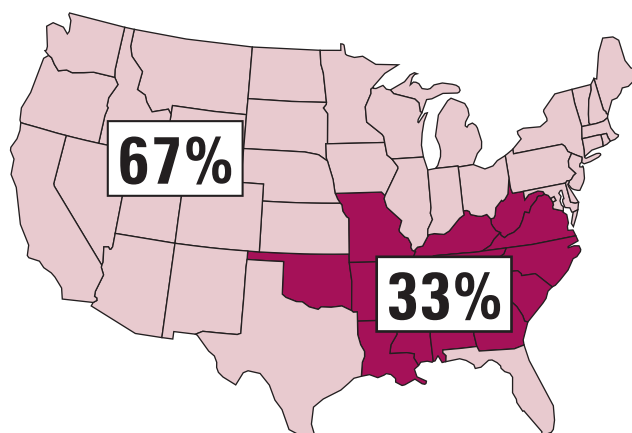
South and Non-South Contributions to Total U.S. Energy Production



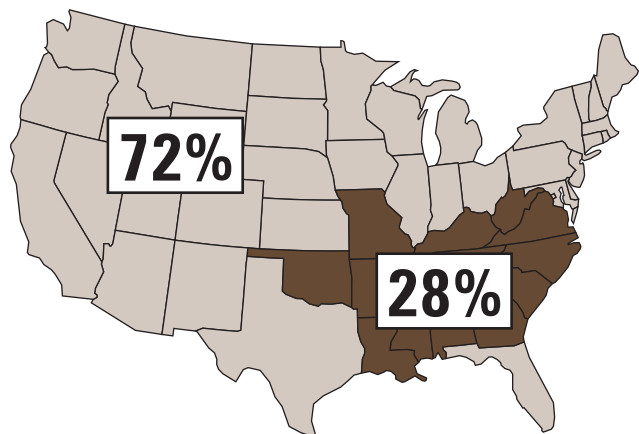
Regional Percentage of Total U.S. Coal Production⁴⁸



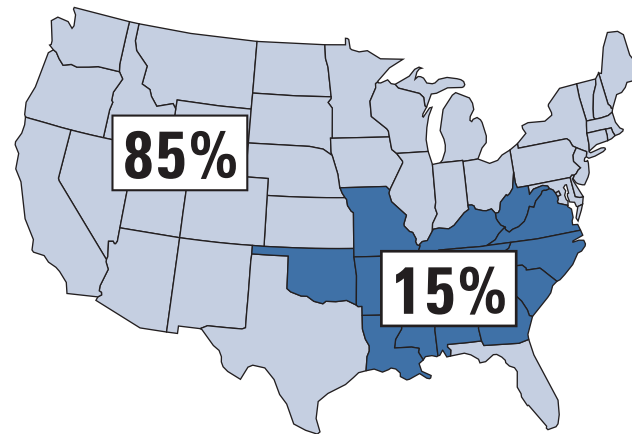
Regional Percentage of Total U.S. Nuclear Energy Production⁵¹



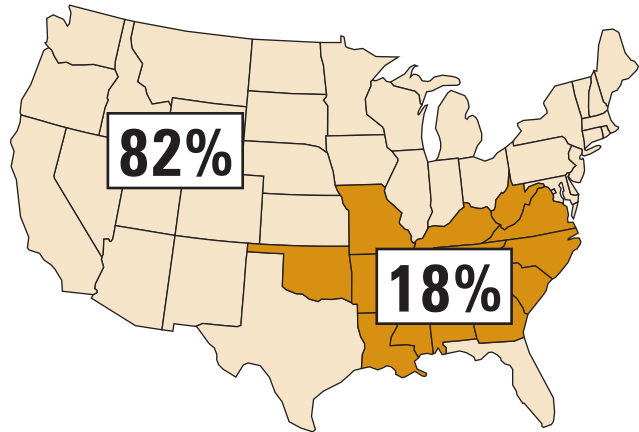
Regional Percentage of Total U.S. Crude Oil Production⁴⁹



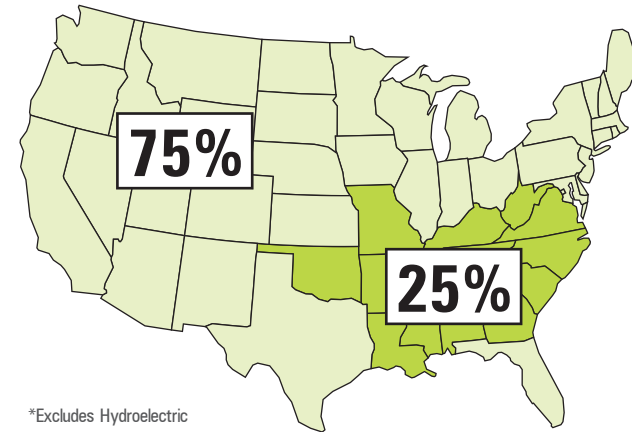
Regional Percentage of Total U.S. Generation of Hydroelectricity⁵²



Regional Percentage of Total U.S. Natural Gas Withdrawal and Production⁵⁰



Regional Percentage of Total U.S. Generation of Electricity from Renewable Energy^{*53}



*Excludes Hydroelectric

Alabama State Energy Profile

2006 Energy Production	1,509 Trillion Btu
2006 Energy Consumption	2,140 Trillion Btu
2006 Energy DEFICIT ⁵⁴	-631 Trillion Btu

Cost of Energy Imported from Outside Alabama⁵⁵

\$6,032,912,523

Alabama's share of
U.S. population:⁵⁶

1.5%

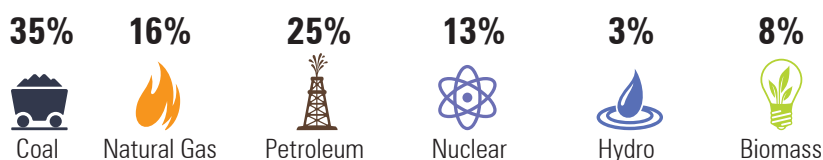
Alabama's share of
U.S. energy consumption:⁵⁷

2.2%

Alabama's share of
U.S. energy production:⁵⁸

2.1%

Energy Consumption by Source⁶⁰



Energy Consumption by End User⁶¹



55,900

Projected new Alabama green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$5,282,195,088

Alabama has significant natural gas and coal reserves, and has soils well suited for the growing of switchgrass for bioenergy. Alabama is a leading producer of hydroelectric power among states east of the Rockies.⁵⁹

See Endnotes for all sources and notes.

Arkansas State Energy Profile

2006 Energy Production	492 Trillion Btu
2006 Energy Consumption	1,145 Trillion Btu
2006 Energy DEFICIT ⁵⁴	-653 Trillion Btu

Cost of Energy Imported from Outside Arkansas⁵⁵

\$6,768,045,590

Arkansas's share of
U.S. population:⁵⁶

.9%

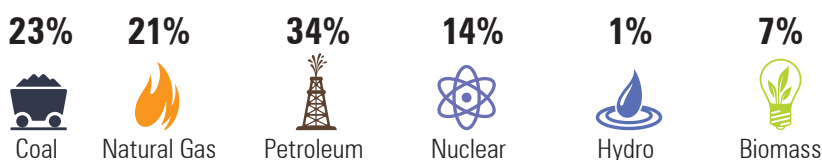
Arkansas's share of
U.S. energy consumption:⁵⁷

1.2%

Arkansas's share of
U.S. energy production:⁵⁸

.7%

Sources of Energy Consumption⁶⁰



Energy Consumption by End User⁶¹



18,400

Projected new Arkansas green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$2,486,195,030

Arkansas' energy supply is derived primarily from nuclear power and coal. Coal burned for energy in Arkansas is imported entirely from Wyoming. Areas within Arkansas are suitable for wind and wood-based energy production.⁵⁹

See Endnotes for all sources and notes.

Georgia State Energy Profile

2006 Energy Production	547 Trillion Btu
2006 Energy Consumption	3,146 Trillion Btu
2006 Energy DEFICIT ⁵⁴	-2,599 Trillion Btu

Cost of Energy Imported from Outside Georgia⁵⁵

\$28,536,210,394

Georgia's share of
U.S. population:⁵⁶

3.1%

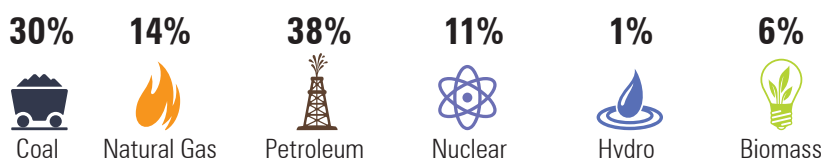
Georgia's share of
U.S. energy consumption:⁵⁷

3.2%

Georgia's share of
U.S. energy production:⁵⁸

.8%

Sources of Energy Consumption⁶⁰



Energy Consumption by End User⁶¹



100,200

Projected new Georgia green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$8,203,623,455

Georgia produces roughly 60 percent of its electricity from coal, with another 25 percent derived from nuclear power. The state is a leading producer of hydroelectric power among states east of the Rockies.⁵⁹

See Endnotes for all sources and notes.

Kentucky State Energy Profile

2006 Energy Production	3,176 Trillion Btu
2006 Energy Consumption	1,971 Trillion Btu
2006 Energy SURPLUS ⁵⁴	1,205 Trillion Btu

Value of Energy Exported from Kentucky⁵⁵

\$11,428,486,555

Kentucky's share of
U.S. population:⁵⁶

1.4%

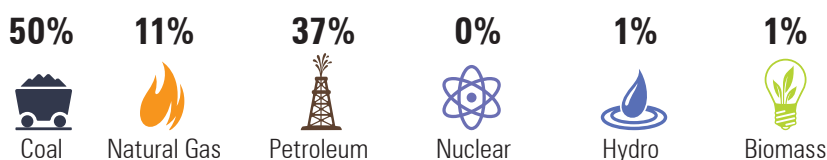
Kentucky's share of
U.S. energy consumption:⁵⁷

2%

Kentucky's share of
U.S. energy production:⁵⁸

4.5%

Sources of Energy Consumption⁶⁰



Energy Consumption by End User⁶¹



29,600

Projected new Kentucky green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$4,096,768,708

Kentucky is the third-leading producer of coal in the U.S., accounting for roughly ten percent of the country's total coal production. It derives 90 percent of its electricity from coal, and exports surplus coal to over two dozen states.⁵⁹

See Endnotes for all sources and notes.

Louisiana State Energy Profile

2006 Energy Production	6,806 Trillion Btu
2006 Energy Consumption	3,802 Trillion Btu
2006 Energy SURPLUS ⁵⁴	3,004 Trillion Btu

Value of Energy Exported from Louisiana⁵⁵

\$26,433,145,713

Louisiana's share of
U.S. population:⁵⁶

1.4%

Louisiana's share of
U.S. energy consumption:⁵⁷

3.8%

Louisiana's share of
U.S. energy production:⁵⁸

9.6%

Sources of Energy Consumption⁶⁰

7%



Coal

37%



Natural Gas

47%



Petroleum

5%



Nuclear

0%



Hydro

4%



Biomass

Energy Consumption by End User⁶¹

7%



Commercial

64%



Industrial

9%



Residential

20%



Transportation



46,000

Projected new Louisiana green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$5,073,226,907

Louisiana holds significant reserves of crude oil and natural gas, and ranks fourth in the nation for production of crude oil and second for production of natural gas. Electricity in the state come primarily from natural gas and coal.⁵⁹

See Endnotes for all sources and notes.

Mississippi State Energy Profile

2006 Energy Production	396 Trillion Btu
2006 Energy Consumption	1,216 Trillion Btu
2006 Energy DEFICIT ⁵⁴	-820 Trillion Btu

Cost of Energy Imported from Outside Mississippi⁵⁵

\$8,762,222,368

Mississippi's share of
U.S. population:⁵⁶

1%

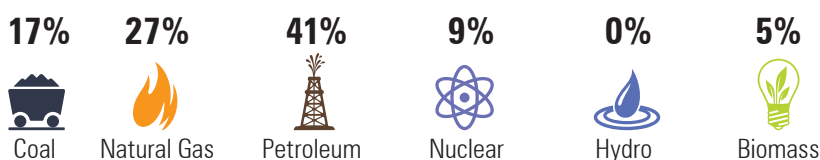
Mississippi's share of
U.S. energy consumption:⁵⁷

1.2%

Mississippi's share of
U.S. energy production:⁵⁸

.6%

Sources of Energy Consumption⁶⁰



Energy Consumption by End User⁶¹



8,060

Projected new Mississippi green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$2,935,453,719

Mississippi has small reserves of crude oil and natural gas, comprising two and one percent of U.S. production totals, respectively. Its electricity is derived most often from imported coal, followed by natural gas and nuclear power.⁵⁹

See Endnotes for all sources and notes.

Missouri State Energy Profile

2006 Energy Production	145 Trillion Btu
2006 Energy Consumption	1,913 Trillion Btu
2006 Energy DEFICIT ⁵⁴	-1,768 Trillion Btu

Cost of Energy Imported from Outside Missouri⁵⁵

\$19,912,485,416

Missouri's share of
U.S. population:⁵⁶

2%

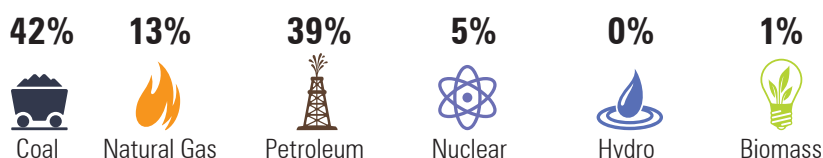
Missouri's share of
U.S. energy consumption:⁵⁷

1.9%

Missouri's share of
U.S. energy production:⁵⁸

.2%

Sources of Energy Consumption⁶⁰



Energy Consumption by End User⁶¹



62,695

Projected new Missouri green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$4,264,665,030

Most of Missouri's electricity is derived from coal imported from Wyoming. A single nuclear reactor produces most of the state's remaining electricity. Just under two percent of Missouri's electricity is derived from renewable sources.⁵⁹

See Endnotes for all sources and notes.

North Carolina State Energy Profile

2006 Energy Production	573 Trillion Btu
2006 Energy Consumption	2,659 Trillion Btu
2006 Energy DEFICIT ⁵⁴	-2,086 Trillion Btu

Cost of Energy Imported from Outside North Carolina⁵⁵

\$23,838,814,404

North Carolina's share of U.S. population:⁵⁶

3%

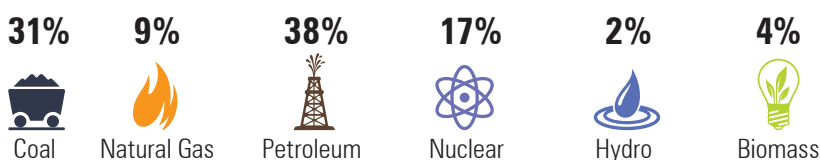
North Carolina's share of U.S. energy consumption:⁵⁷

2.7%

North Carolina's share of U.S. energy production:⁵⁸

.8%

Sources of Energy Consumption⁶⁰



Energy Consumption by End User⁶¹



98,000

Projected new North Carolina green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$7,848,213,243

North Carolina's electricity comes primarily from nuclear power and from imported coal from Kentucky and West Virginia. The state has three nuclear power plants, making it a leading producer of nuclear power in the U.S.⁵⁹

See Endnotes for all sources and notes.

Oklahoma State Energy Profile

2006 Energy Production	2,402 Trillion Btu
2006 Energy Consumption	1,603 Trillion Btu
2006 Energy SURPLUS⁵⁴	799 Trillion Btu

Value of Energy Exported from Oklahoma⁵⁵

\$8,089,887,461

Oklahoma's share of
U.S. population:⁵⁶

1.2%

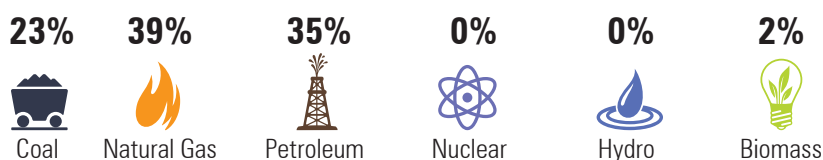
Oklahoma's share of
U.S. energy consumption:⁵⁷

1.6%

Oklahoma's share of
U.S. energy production:⁵⁸

3.4%

Sources of Energy Consumption⁶⁰



Energy Consumption by End User⁶¹



22,400

Projected new Oklahoma green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$3,056,929,401

Oklahoma is a major producer of crude oil and natural gas - nearly ten percent of all U.S. natural gas originates in the state. The western portion of the state holds promise for the production of wind power.⁵⁹

See Endnotes for all sources and notes.

South Carolina State Energy Profile

2006 Energy Production 630 Trillion Btu

2006 Energy Consumption 1,708 Trillion Btu

2006 Energy DEFICIT⁵⁴ -1,078 Trillion Btu

Cost of Energy Imported from Outside South Carolina⁵⁵

\$10,959,498,361

South Carolina's share of U.S. population:⁵⁶

1.4%

South Carolina's share of U.S. energy consumption:⁵⁷

1.7%

South Carolina's share of U.S. energy production:⁵⁸

.9%

Sources of Energy Consumption⁶⁰

24%



Coal

10%



Natural Gas

32%



Petroleum

29%



Nuclear

1%



Hydro

4%



Biomass

Energy Consumption by End User⁶¹

15%



Commercial

38%



Industrial

20%



Residential

26%



Transportation



61,227

Projected new South Carolina green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$4,466,334,924

South Carolina has four nuclear power plants, with four more in the planning stages. Nuclear power generates roughly half of the state's electricity. Most additional electricity is derived from coal, imported mostly from Kentucky.⁵⁹

See Endnotes for all sources and notes.

Tennessee State Energy Profile

2006 Energy Production	462 Trillion Btu
2006 Energy Consumption	2,313 Trillion Btu
2006 Energy DEFICIT ⁵⁴	-1,851 Trillion Btu

Cost of Energy Imported from Outside Tennessee⁵⁵

\$19,343,470,169

Tennessee's share of
U.S. population:⁵⁶

2%

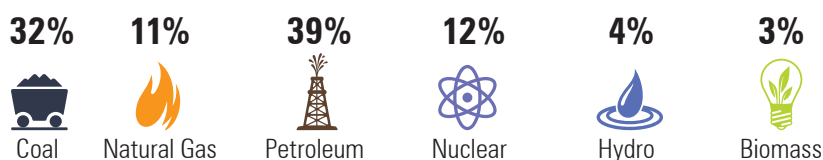
Tennessee's share of
U.S. energy consumption:⁵⁷

2.3%

Tennessee's share of
U.S. energy production:⁵⁸

.9%

Sources of Energy Consumption⁶⁰



Energy Consumption by End User⁶¹



90,218

Projected new Tennessee green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$5,732,672,184

Tennessee's electricity comes primarily from coal imported from numerous states, followed by nuclear and hydroelectric power. The Tennessee Valley Authority owns nearly all of the state's electricity-producing assets.⁵⁹

See Endnotes for all sources and notes.

Virginia State Energy Profile

2006 Energy Production	1,297 Trillion Btu
2006 Energy Consumption	2,545 Trillion Btu
2006 Energy DEFICIT ⁵⁴	-1,248 Trillion Btu

Cost of Energy Imported from Outside Virginia⁵⁵

\$14,012,269,391

Virginia's share of
U.S. population:⁵⁶

2.6%

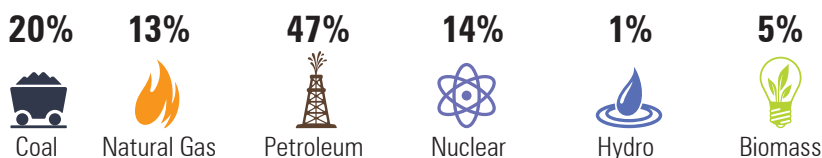
Virginia's share of
U.S. energy consumption:⁵⁷

2.6%

Virginia's share of
U.S. energy production:⁵⁸

.7%

Sources of Energy Consumption⁶⁰



Energy Consumption by End User⁶¹



216,400

Projected new Virginia green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$6,033,813,153

Virginia has small but significant supplies of coal and natural gas that help meet the state's electricity demand. One third of the state's electricity derives from nuclear power. Eastern Virginia holds promise for the production of wind power.⁵⁹

See Endnotes for all sources and notes.

West Virginia State Energy Profile

2006 Energy Production	4,107 Trillion Btu
2006 Energy Consumption	829 Trillion Btu
2006 Energy SURPLUS ⁵⁴	3,278 Trillion Btu

Value of Energy Exported from West Virginia⁵⁵

\$30,858,672,859

West Virginia's share of U.S. population:⁵⁶

.6%

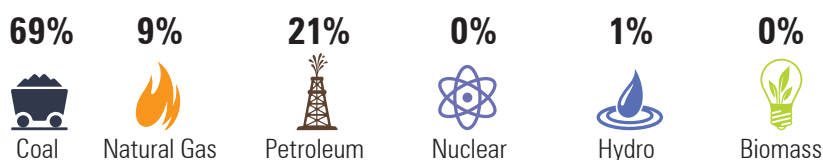
West Virginia's share of U.S. energy consumption:⁵⁷

.8%

West Virginia's share of U.S. energy production:⁵⁸

1.8%

Sources of Energy Consumption⁶⁰



Energy Consumption by End User⁶¹



10,700

Projected new West Virginia green jobs by 2038⁶²



Potential Savings from Energy Efficiency, 2009-2030⁶³

\$1,386,389,842

West Virginia produces more coal than any state other than Wyoming, and accounts for greater than ten percent of U.S. coal production. It consumes little electricity, allowing the state to lead the nation in interstate electricity exportation.⁵⁹

See Endnotes for all sources and notes.

2009 Southern Growth Innovator Awards

Natural Resources Management & Development Institute

Auburn University

Objective: To create and promote traditional and innovative natural resource products, services, and sustainable practices for the benefit of communities today and for the well-being of generations to come.

Established in 2006, the Natural Resources Management & Development Institute (NRMDI) at Auburn University is dedicated to fostering innovation in the promotion and improvement of natural resource-based products and services, and the use of sustainable practices to benefit Alabama and the South. NRMDI is home to the USDA Grand Challenge Award-winning Center for Bioenergy and Bioproducts, an organization with a proven track record of advancing the economic development of industries that depend on Southern agricultural and forest commodities to create new sustainable energy technologies and value-added products.

The Center's efforts are being enhanced by a new state-of-the-art biomass fractionation, gasification, and syngas-to-liquids conversion facility that will be the only location in the American South that can address every facet of the challenge presented by integrating Southern biomass into a sustainable energy future. This facility will help train new generations of engineers and scientists to populate 21st century biorefineries and power plants.

By employing integrated approaches, and with consideration for entire systems (supply chains), NRMDI has been, and continues to be, uniquely successful in finding regionally appropriate, replicable solutions to the energy and water needs facing our region and nation.

Green Valley Network

Objective: To create the next technology cluster in Arkansas by fostering collaboration, development and commercialization of sustainable technology.

Created in the Spring of 2008, Green Valley Network is a non-profit organization dedicated to creating the next technology cluster in Arkansas. It's been done before – the Research Triangle cultivated biotech, Silicon Valley owns IT, and Green Valley is the center of sustainability technology. It's where academia, government and business leaders share ideas, spur growth and foster economic development for sustainability technology.

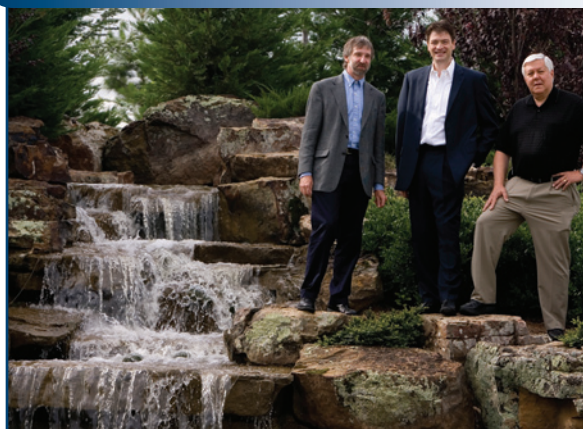
Draw a circle using Northwest Arkansas as the center, with a radius of about a five hour drive from Fayetteville. Take a look at the resources within: the largest global consumer demand retailer and proponent of sustainability on Earth, the greatest number of consumer product goods companies (more than 1,300), the largest concentration of plant scientists in the world, a national energy center, and the world's busiest cargo airport. There is no other region on the planet that houses what exists in Green Valley.

The global business world knows that weaving environmentally sound corporate practices into their business models increases both profitability and "green" benefits. Green Valley Network serves as the communication and educational tool for academia, government, community leaders and businesses within Green Valley. On Green Valley's website, www.greenvalleynetwork.org, visitors can collaborate with innovators and businesses to eliminate the middle man between sustainable technology and commercialization.

Alabama



Arkansas



Georgia



Centers of Innovation for Agribusiness & Energy Georgia Centers of Innovation

Objective: To make Georgia nationally and globally competitive through technology and innovation.

The Centers of Innovation program was formed in 2005 as part of Governor Sonny Perdue's Strategic Industry Program. Two Centers – the Center of Innovation for Agribusiness (COI-Ag) and the Center of Innovation for Energy (COI-Energy) – collaborate on bioenergy projects. The COI-Energy also handles solar, wind, and waste-to-energy projects.

The COI-Ag focuses on technology-oriented companies in precision agriculture, value-added agriculture such as nutraceuticals and organics, renewable fuel biomass production, poultry, forest products and biotechnology. COI-Ag applies technology to maximize yields and reduce costs, and streamlines processes at packaging and distribution companies for bottom line impact.

COI-Energy increases the production and use of renewable energy in Georgia. Georgia industries are well-positioned to capitalize on the state's renewable natural resources such as pine forests and agricultural products, along with waste streams from municipalities and industries. Companies gain a competitive edge when paired with the state's university brain trust, cutting edge research facilities, and well developed rail and shipping systems.

The Centers assist companies with direct advice, introductions to the regulatory and research communities, and strategic industry connections. The net effect is expedited commercialization of innovations for entrepreneurial ventures. Together, they light the way for innovative companies to thrive in Georgia.

Kentucky



Kentucky Rural Energy Consortium Kentucky Pollution Prevention Center

Objective: To develop partnerships and fund research that advances Kentucky's renewable energy and energy efficiency potential.

Established in 2005 by a direct federal appropriation, the Kentucky Rural Energy Consortium (KREC) is a partnership of Kentucky universities, government agencies, industry and the public. KREC's grass roots consortium allows it to serve as a clearinghouse and networking group on renewable energy and energy efficiency activities of importance to Kentucky. Consortium members exchange knowledge, program developments and ongoing activities in order to build partnerships throughout the state. The Consortium, administered by the Kentucky Pollution Prevention Center and overseen by its Advisory Board, enjoys broad support from the public. To date, KREC has 57 partners and more than 180 members, and since 2005 KREC has awarded \$1.14 million in grants for research focused on commercially viable technologies related to renewable energy and energy efficiency. Additionally, KREC published a 25x25 Legislative Prospectus and a comprehensive 25x25 Roadmap that provides a detailed review and specific recommendations for Kentucky to obtain 25 percent of its energy from renewable sources by 2025.

Gulfsouth Youth Biodiesel Project

Operation REACH

Objective: To engage, empower and inspire youth involvement in community development and social entrepreneurship through green collar job training in which youth, ages 14 to 25, learn the ins and outs of how to turn raw organic materials into eco-friendly alternative fuels.

Operation REACH, Inc. is a non-profit community education resource that develops model programs for youth and families to create opportunities and transform lives. The Gulfsouth Youth Biodiesel Project fills a critical need by developing job skills among urban youth for the growing 21st century green economy. Youth involved with the program gain valuable skills, ranging from leadership and business savvy to mechanics, chemistry and engineering. Young people learn the chemistry and engineering required for alternative fuel production, the mechanics of diesel engines, and the environmental impacts of both eco-friendly biofuels and traditional petroleum-based fuels.

Participating youth secure commitments from local restaurants, caterers and cafeterias to provide used cooking oil/fryer grease to the project. Suppliers are equipped with a five gallon Gulfsouth Youth Action Corps Biodiesel Project barrel that youth and their adult supporters pick up weekly. Then, under the direction of trained chemists and fuel production professionals, youth participants convert the used cooking oil and fryer grease into eco-friendly biofuel. Youth participants also meet on a regular basis to conduct planning and receive training in the basics of biodiesel production, leadership, business development, management, sales and marketing.

Louisiana



Sustainable Energy Research Center

Mississippi State University

Objective: To develop renewable transportation fuels to meet the nation's goal of replacing 20 percent of the fuel supply with renewable energy.

The Sustainable Energy Research Center (SERC) was established in 2006 at Mississippi State University (MSU) through funding from the U.S. Department of Energy. The mission of SERC is to develop a renewable energy industry in Mississippi and the Southeast. SERC was formed to create an infrastructure for coordinated interdisciplinary collaboration at MSU in the development of environmentally and economically sustainable and renewable energy sources specific to the Southeastern United States. Cross-disciplinary teams work on research projects to ensure that the sustainable energy sources, technologies, and policies developed are not only theoretically promising, but offer practical, workable implications for the future of bioenergy. SERC serves as a conduit for the development of integrated research and educational programs for the state of Mississippi. The Center is also a catalyst for forging partnerships between academia, business and government.

Mississippi



Missouri



Alternative Energy Program

Northwest Missouri State University

Objective: Utilize alternative fuel sources to reduce the University's dependence on fossil fuels and purchase regionally produced renewable energy sources that create economic benefits for the region.

In 1982 Northwest Missouri State University established a biomass energy system that utilized renewable sources generated within the region. A thriving wood products industry used its surplus of wood waste to provide wood chips as a fuel. This resulted in a unique value-added product for the industry.

A state mandate in 1990 to reduce by 40 percent the amount of waste accepted by state landfills motivated the University and local government partners to pelletize discarded newspaper, corrugated cardboard boxes, magazines and other clean paper as a fuel. Utilizing wood chips and pelletized waste paper reduced the University's fuel costs and saved money for the State of Missouri. After 25 years of operation, approximately \$12,500,000 in savings has resulted from the use of alternative fuel sources as compared to purchasing natural gas and oil.

Later in the 1990s, pellets made from solid waste from the University's swine and dairy operations mixed with dry agricultural feedstocks were added to the energy system. The University acquired a patent for this animal waste to energy production process in November 2000. Along with wood chips and paper pellets, this fuel source reduced the University's dependence on fossil fuels by 80-85 percent.

The result of this green energy model has yielded a savings of millions by eliminating the need to purchase imported fossil fuel. Instead, those dollars purchase regionally produced renewable energy sources that create employment opportunities and economic benefits for the region.

North Carolina



NC Woody Biomass

North Carolina State University Extension Forestry

Objective: To provide education and materials that promote economic opportunities related to renewable energy derived from woody biomass through its research-based, educational initiative.

Extension Forestry at North Carolina State University began focusing on encouraging the economic opportunities related to woody biomass-based alternative energy in 2004. The driving factor behind the effort was the interest in renewable energy brought about by the increase in energy costs and global climate change. To address this, Extension Forestry utilized its expertise in outreach and research, and its ability to build partnerships. These efforts resulted in the passing of a renewable energy portfolio standard, which led to the development of Extension Forestry's research-based educational initiative, NC Woody Biomass. The program's goal is to provide education and materials that promote economic opportunities related to woody biomass-based renewable energy. The program provides resource analyses to major utilities, private industries and others, a forum on bioenergy and other forms of alternative energy for the larger community, a web portal for information delivery (www.ces.ncsu.edu/forestry/biomass.html), and educational materials addressing renewable energy and woody biomass. The initiative has reached over 1,000 participants through conferences, professional trainings and educational events for landowners.

Green Innovation

University of Central Oklahoma

Objective: To become a green university that provides initiatives for students, faculty, staff and the surrounding community.

In 2004, the University of Central Oklahoma (UCO) made the decision to become a green university. While UCO has taken on multiple energy-saving initiatives, the most innovative of their initiatives include performance contracting, purchasing 100 percent of their power from wind, and the on-site creation of biodiesel.

Performance Contracting – In 2001, UCO moved to resolve long-standing facility energy and capital investment problems. Performance contracting, which allows for the financing of expensive energy efficiency improvements with low up-front costs, was recognized as the medium to resolve UCO's energy problems. Since its implementation, more than \$3.8 million has been saved and they have reduced their CO₂ emissions by 60,000,000 pounds.

Wind Energy – In 2006, UCO began to purchase electricity from wind power. To date, UCO has saved over 50,000,000 kwh of electricity provided via wind.

Biodiesel – In response to the rising cost of petroleum and its environmental effects that run counter to UCO's mission as a green university, the UCO physical plant developed and designed a biodiesel production system. Since 2006, the biodiesel project has saved over \$10,000 by substituting 2,400 gallons of biodiesel for traditional diesel, and from yearly supplies of a degreaser for mechanics that is created from a byproduct of the biodiesel manufacturing process.

Oklahoma



USC-Columbia Fuel Cell Collaborative

USC, City of Columbia, EngenuitySC & SC Research Authority

Objective: To position Columbia, South Carolina as a leader in hydrogen fuel cell innovation and technology.

USC–Columbia Fuel Cell Collaborative was formed in 2006 by the University of South Carolina, the City of Columbia, EngenuitySC and the South Carolina Research Authority to position Columbia, SC as a leader in hydrogen fuel cell innovation and technology.

The program was created to develop technology-based solutions to the global energy issue and to create high skill/high paying jobs. Collaborative members believe that fuel cells and other alternative energy options will revolutionize not only cities, but more importantly, the lives of citizens through the freedom that comes from energy independence, the overall environmental benefits and the economic opportunity that this potential trillion dollar new industry will generate.

The Fuel Cell Collaborative focuses on the creation of intellectual property by fostering research partnerships and activities and incentivizing individuals and groups to direct their talents and imagination toward fuel cell related technology. The collaborative also works to establish a local business and entrepreneurial environment conducive to company formation centered on the intellectual property developed at or in partnership with the University of South Carolina, and the creation of a commercial market for fuel cell products and an economic cluster of fuel cell companies that will call the Columbia Fuel Cell District home.

South Carolina



Tennessee



BioSAT Web System

U.S. Forest Service, Southern Research Station and the Southeastern SunGrant Center at the University of Tennessee

Objective: To help rapidly screen and optimally site biomass collection or processing centers by zip-code for the 33 Eastern states by using a comprehensive web-based analytical dashboard for agricultural and forestry biomass.

In 2007, the U.S. Forest Service, Southern Research Station and the Southeastern SunGrant Center at The University of Tennessee formed a partnership to provide research, policy, and business practitioners with innovative biomass-to-energy research that accommodates regional differences in available feedstock supplies, infrastructure capacities, and environmental benefits for the South and beyond. Through integrated research relationships they foster a better understanding of global energy influences on the agricultural and forest sector and its continued productive management and use.

The genesis of BioSAT grew from the idea that the stability of biomass markets hinges on improved methods to display the risk and cost of supply and logistics from farms and forests to conversion facilities. A major difficulty is that feedstock production in the field is not automatically linked to proposed facility locations. The BioSAT (Biomass Site Assessment Tools) web system helps rapidly screen and optimally site cellulosic biomass collection or processing centers by zip-code tabulation area for the 33 Eastern states. BioSAT focuses on supply chain cost and logistics from farms and forests to collection or conversion facilities, maps and displays up-to-date baseline data for public and business leaders, assesses the economic availability of woody and agricultural-derived biomass, identifies local market conditions, and thereby reduces screening time to locate sites favorable for biomass businesses.

Virginia



GreenTrees

C2I, LLC

Objective: To grow renewable biomass supplies and encourage conservation in scale throughout the region while increasing financial incentives for landowners and accelerating carbon sequestration using a specific inter-planting of cottonwoods and mixed hardwoods.

GreenTrees is a privately managed forest restoration program created for landowners whose properties are located within the seven states of the Lower Mississippi Alluvial Valley. GreenTrees is managed by C2I, a project development and management company located in Virginia.

GreenTrees is designed to create, enhance and sustain conservation and wildlife benefits by providing incentives for the planting of new forests. By addressing the growing demands for forestry carbon offsets and renewable biomass supplies, GreenTrees is able to provide landowners the most economic and environmental value for each acre of trees planted.

In exchange for the owners' long-term lease of their land, GreenTrees offers a variety of short and long-term income opportunities. Landowners can simultaneously enroll the same qualified acres into GreenTrees, the Conservation Reserve Program, and other conservation practices, thus receiving multiple financial incentives and incomes simultaneously.

GreenTrees uses the value of carbon offsets and renewable biomass to tip the economic scales in favor of long-term ecosystem restoration. In doing so, GreenTrees creates a new

and valuable forest asset for participating landowners while directly providing the Lower Mississippi Alluvial Valley region, and generations to come, a new economic and environmental resource.

Natural Capital Investment Fund

Objective: To foster sustainable economic development and create quality employment in rural communities.

The Natural Capital Investment Fund (NCIF) provides debt and equity financing to environmental and natural resource-based small businesses. NCIF is certified as a Community Development Financial Institution and is an affiliate of The Conservation Fund, a national nonprofit organization with a unique dual mission of land and water conservation and economic development.

NCIF partners with CEI Capital Management to provide access to New Markets Tax Credit financing of \$5 million or more. NCIF targets start-up to expansion-stage companies with market traction and growth opportunities. NCIF's capital enables traditional lenders, community development funds, and government credit-enhanced programs to participate in financing, thus increasing the flow of capital to emerging green sectors.

NCIF's business clients are located throughout North Carolina, Northeast Tennessee, Southwest Virginia and West Virginia, and have limited access to capital from traditional sources. In addition to providing critical, timely financing, NCIF provides targeted technical assistance to build the non-financial capacity of their clients.

West Virginia



“Arkansas is well-positioned to play a prominent role in the continued development of alternative energies...If we continue to push forward, we can curb our dependence on foreign resources while keeping jobs and money at home.”

Governor Mike Beebe, Arkansas

State Policy Dialogues & Community Forums

State Policy Dialogues

Frankfort, Kentucky

Office of the Governor, Department for Energy Development and Independence, Kentucky State University

St. Louis, Missouri

St. Louis Regional Chamber & Growth Association

South Charleston, West Virginia

Marshall University, Office of Information Technology

Columbia, South Carolina

South Carolina Technology Alliance

Community Forums

ALABAMA

Fayette

Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Greensboro

Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Huntsville

Renewable Energy Outreach (REO) of BizTech; University of Alabama, Huntsville

Montgomery

Design Alabama; the Alabama Council on the Arts; Caroline Marshall Draughton Center for the Arts and Humanities

ARKANSAS

Batesville

University of Arkansas Community College at Batesville; Area 6 Business and Industry Consortium; Batesville Chamber of Commerce

Beebe

Arkansas State University-Beebe; Beebe Chamber of Commerce

DeWitt

Phillips Community College of the University of Arkansas

GEORGIA

Atlanta

Georgia Tech Enterprise Innovation Institute; Center for Quality Growth and Regional Development; Georgia Tech's City & Regional Planning Program

Atlanta

Georgia Tech Enterprise Innovation Institute; The Cathedral of St. Philip's Green Guild

KENTUCKY

London

The Center for Rural Development; Leadership Kentucky, Inc.

Morehead

The Center for Rural Development; Leadership Kentucky, Inc.

Owensboro

Green River Area Development District & Green River Workforce Investment Board

Pikeville

The Center for Rural Development; Leadership Kentucky, Inc.

Richmond

Eastern Kentucky University; AT&T; Berea College; Berea Chamber of Commerce; E-ON; Madison County Schools; Richmond Chamber of Commerce; Siemens Building Technologies

Russell Springs

The Center for Rural Development; Leadership Kentucky, Inc.

LOUISIANA

New Orleans

City-Works

Ruston (two forums)

Louisiana Tech University

MISSISSIPPI

Aberdeen

VanDaniel Marketing; Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Cleveland

Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Columbus

Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Hattiesburg

Pearl River Community College; Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Laurel

Ridgeway's Tax Service; Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Leakesville

Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Maben

Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Mayhew

East Mississippi College Center for Manufacturing Technology Excellence (EMCC CMTE); Mississippi State Community Action Team (MSCAT); Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Meadville

Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Mississippi State

Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Port Gibson

Port Gibson Middle School; Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

Raymond

Hinds Community College, Department of Business Administration; Mississippi State University, Dr. Bo Beaulieu, Rural Community & Economic Development Course

MISSOURI

Joplin

Workforce Investment Board of Southwest Missouri; Joplin Business Journal's Going Green Symposium

St. Louis

FOCUS St. Louis, Metropolis St. Louis; League of Women Voters of St. Louis

NORTH CAROLINA

Boone

High Country Workforce Development Board

Boone

AIRE (Appalachian Institute for Renewable Energy); ASU Energy Center; ASU Department of Appropriate Technology; AIRE Apparent, LLC

Charlotte

UNC Charlotte; Environmental Assistance Office, Global Institute for Energy and Environmental Systems, Facilities Planning

Pittsboro

Central Carolina Community College; Chatham County Economic Development Corporation

OKLAHOMA

Okahoma City

State of Oklahoma

TENNESSEE

Blountville

University of Tennessee Institute for Public Service; First Tennessee Development Center

Crossville

University of Tennessee Institute for Public Service; City of Crossville

Jackson

University of Tennessee Institute for Public Service; University of Tennessee Agriculture Extension; Southwest Tennessee Development District



Martin

University of Tennessee Institute for Public Service; University of Tennessee at Martin, Department of Agriculture

Memphis

Memphis Bioworks Foundation and West Tennessee Clean Cities Coalition

Murfreesboro

Mind2Marketplace; Rutherford County Chamber of Commerce; Middle Tennessee State University; University of Tennessee Institute for Public Service

VIRGINIA

Danville

The Institute for Advanced Learning and Research; Danville Science Center

Newport News

Hampton Roads Partnership; the Hampton Roads Mayors and Chairs Caucus; Jefferson Lab; Moderated by Cathy Lewis, WHRV Radio

Williamsburg

Lead Virginia Alumni; Weldon Cooper Center for Public Service, University of Virginia

WASHINGTON, DC

Various Southern States, Virtual (online & phone), Southeastern Universities Research Association (SURA)

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Bob Frisina, Office of the Governor

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Alabama Commission on Higher Education

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Auburn University, University Outreach
Boise Cascade, L.L.C.

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Jacksonville State University

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University of Alabama, Alabama Innovation and Mentoring of Entrepreneurs

University of Alabama, Alabama Small Business Development Consortium

University of Alabama-Tuscaloosa, Office of Research

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ARKANSAS

Arkansas Educational Television Network, Education Department

Arkansas State University–Newport

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FutureFuel Chemical Company, Human Resources

Mid-South Community College

North Arkansas College

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University of Arkansas, Little Rock, Institute for Economic Advancement

University of Arkansas, Little Rock, Institute of Government

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University of Delaware, Institute for Public Administration

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Southeastern Universities Research Association

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Florida State University, The John Scott Dailey Florida Institute of Government

Florida State University, Florida Public Affairs Center

University of Central Florida, University Economic Development

University of Florida, School of Forest Resources and Conservation, Tim L. White (*SAFER Steering Committee*)

University of Florida, IFAS Office of Research

University of Florida, Office of Research

GEORGIA

Albany State University, Regional Center for Entrepreneurship, Business & Workforce Development

Forest Landowners Association, Inc.

“Alabama is blessed with abundant, renewable natural resources and innovative entrepreneurs. Our state government is using these assets to advance the development of alternative energy through public-private partnerships and grants...and position Alabama as a leader in the growing alternative-energy industry.”

Governor Bob Riley, Alabama

Georgia Forestry Commission, Forest Utilization and Marketing, Nathan McClure (*SAFER Steering Committee*)

Georgia Institute of Technology, Enterprise Innovation Institute

Georgia Institute of Technology, Center for Quality Growth and Regional Development

International Forest Company

Kennesaw State University, A.L. Burruss Institute of Public Service

Market Street Services, Inc.

OneGeorgia Authority

Technical College System of Georgia

University of Georgia, Public Service and Outreach

University of Georgia, The Fanning Institute

University System of Georgia Board of Regents, Office of Economic Development

ILLINOIS

Gas Technology Institute

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KENTUCKY

Eastern Kentucky University, Center for Economic Development, Entrepreneurship & Technology

Green River Area Development District, Workforce Development

Kentucky Cabinet for Economic Development, Kentucky Department of Commercialization and Innovation

Kentucky Chamber of Commerce

Kentucky League of Cities

Kentucky Power Company, American Electric Power

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Western Kentucky University, Department of Communication

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Lower Pearl River Valley Foundation

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Mississippi Gulf Coast Community College

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Missouri Community College Association

Timmie Lynn Hunter (*Individual Member*)

NORTH CAROLINA

Charlotte Regional Partnership

Council for Entrepreneurial Development (CED)

Eastern Carolina Workforce Development Board, Inc.

e-NC Authority

Forsyth Technical Community College

GlaxoSmithKline, State Government Affairs

Greater Durham Chamber of Commerce

Greater Raleigh Chamber of Commerce

Morrisville Chamber of Commerce

Nash Community College

NC Network

North Carolina Arts Council

North Carolina State University, Department of Forestry and Environmental Resources

“With North Carolina’s thriving biotech sector, world-class research institutions and deep-rooted strength in agriculture, we have all the necessary assets to turn energy challenges into economic opportunities...In North Carolina, green is gold.”

Governor Beverly Perdue, North Carolina

North Carolina State University,
Department of Agricultural & Resource
Economics, Kelly D. Zering (*SAFER
Steering Committee*)

Regional Technology Strategies, Inc.
(RTS, Inc.)

Research Triangle Regional Partnership
SJF Advisory Services

Southern Association of Agricultural
Experiment Station Directors

UNC Chapel Hill, Kenan Institute of
Private Enterprise

UNC Chapel Hill, School of Government

UNC Chapel Hill, Office of Economic
and Business Development

UNC Chapel Hill, Center for Global
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Ohio University, Voinovich School for
Leadership and Public Affairs

OKLAHOMA

Ardmore Chamber of Commerce/
Ardmore Development Authority

Autry Technology Center

Oklahoma State University

OSU/A & M Board of Regents

Redlands Community College,
Workforce & Economic Development

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INDUNIV Research Consortium

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Service

Clemson University, Strom Thurmond
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Telecommunications Association

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(*SAFER Steering Committee*)

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South Carolina Sea Grant Consortium

Technical College of the Lowcountry

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for Public Service and Policy Research

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Cornerstone Foundation of Knoxville

Knoxville Area Chamber Partnership,
Workforce Development & Education

Oak Ridge Associated Universities

Oak Ridge National Laboratory, managed
by UT-Battelle LLC

Oak Ridge National Laboratory, managed
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(LSD), Brian H. Davison (*SAFER Steering
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Leonard Bull (*Individual Member*)

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Institute for Advanced Learning and
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Steering Committee and SAFER
Chairman*)

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Center

University of Virginia, Weldon Cooper
Center for Public Service

Virginia Tech, Outreach & International
Affairs

Wise County DEVELOP Program

WEST VIRGINIA

Marshall University, Information
Technology/CIO

West Virginia University, Advanced
Energy Initiative

West Virginia University, Office of
Research & Economic Development

“In Mississippi our energy policy is ‘more energy.’ Nothing is better for economic recovery than creating new, high-paying jobs in the energy sector.”

Governor Haley Barbour, Mississippi

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Office of the Governor
Nashville, TN

Co-Chairman, The Honorable Matthew Kisber

Commissioner

Tennessee Department of Economic
& Community Development
Nashville, TN

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President & CEO

Arkansas Research Alliance
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Division Director

Energy, Weatherization and
Technology Division
Alabama Department of Economic &
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Arkansas Science & Technology
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Little Rock, AR

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OK Secretary of Science & Technology and President

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Director of Partnerships Directorate

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managed by UT-Battelle LLC
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Executive Director

OK Center for the Advancement of
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Atlanta, GA

Dr. Alice M. Clark

Vice Chancellor

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Corporation
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Information Technology/CIO

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Office of Business Development
Louisiana Economic Development
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Director

Workforce Training
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Fort Smith, AR

Dr. Liam E. Leightley

Chairman, SAFER and Executive

Director

Institute for Advanced Learning and
Research
Danville, VA

Mr. Tony Lester

Vice President, Strategic Development

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Oak Ridge, TN

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Dean and Professor

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Management and Technology
Western Carolina University
Cullowhee, NC

Ms. Jane Smith Patterson

Executive Director

e-NC Authority
Raleigh, NC

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South Carolina Technology Alliance
Columbia, SC

Dr. Winfred M. "Win" Phillips

Vice President

Office of Research
University of Florida
Gainesville, FL

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Director, Economic Development

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Executive Director

Virginia High Tech Partnership
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*Assistant Vice Chancellor, Extension,
 Engagement and Economic
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 Governor's Office of Technology
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 Medicine & Biosciences
 Kansas City, MO

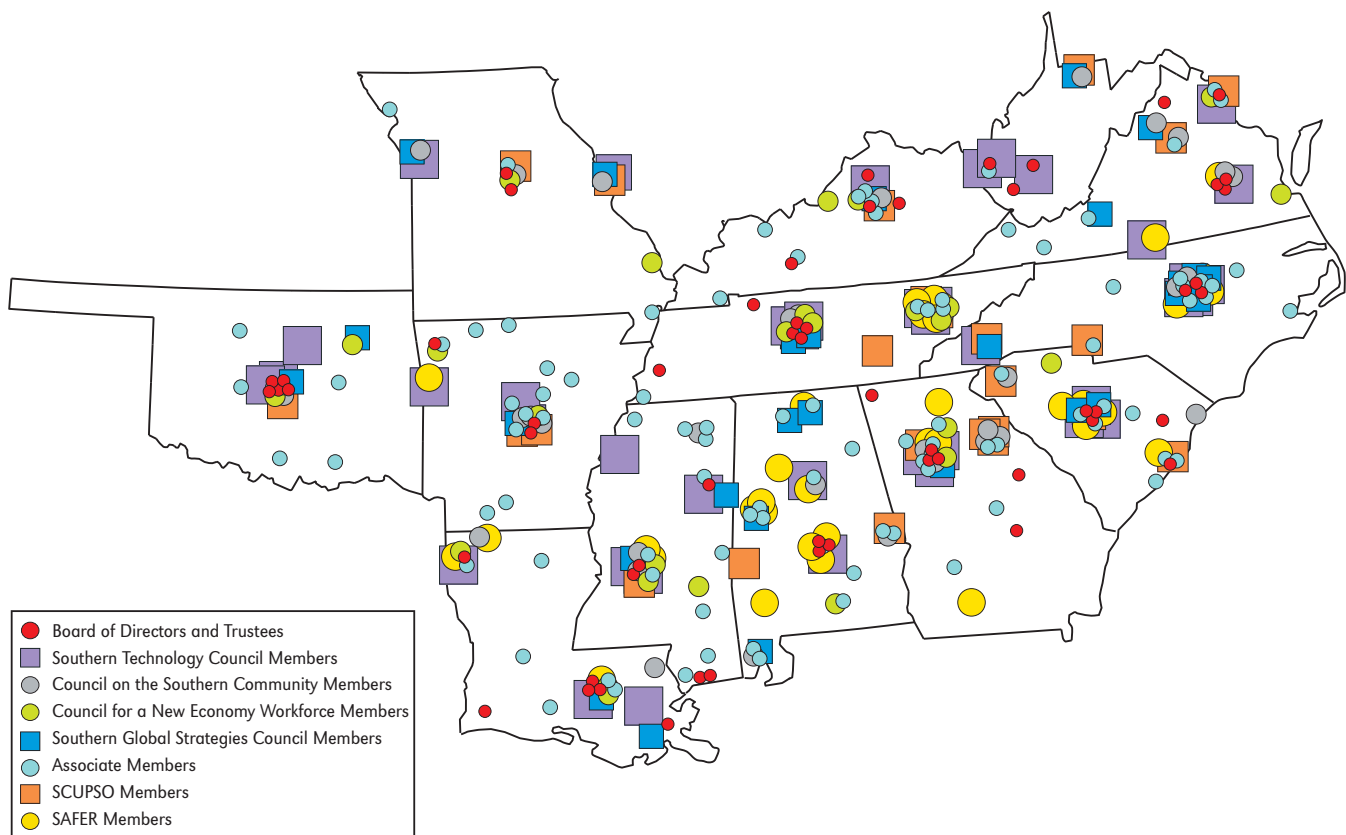
Ms. Cynthia C. Snyder
*Regional Manager, Public Programs,
 State Government Affairs*
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 Jackson, MS

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*Senior Advisor, Office of Federal
 Co-Chairman*
 Delta Regional Authority
 Clarksdale, MS



Southern Growth Partners



Endnotes

Executive Summary

- 1 2006. Calculated from Energy Information Administration, Table P3. Energy Production and Consumption Estimates in Trillion Btu by State, 2006, http://www.eia.doe.gov/emeu/states/sep_prod/P3/PDF/P3.pdf, downloaded July 6, 2009.
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Population: 2007. U.S. Census Bureau, *2007 American Community Survey*, Table B01003: Total Population, <http://factfinder.census.gov/>. Downloaded July 6, 2009.
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- 13 2006-2008. Based on Exhibit 1: *The Clean Energy Economy: Repowering Jobs, Businesses, and Investments Across America*, The Pew Charitable Trusts, 2009, http://www.pewcenteronthestates.org/uploadedFiles/Clean_Economy_Report_Web.pdf, 2006-2008.
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- 15 Many terms are used for non-traditional sources — sources that don't usually include oil, gas, coal and nuclear. Many of the statistics in the report result from sources that define non-traditional in their own peculiar way. Generally, we refer to non-traditional sources of energy such as wind, solar, and biomass as "alternative energy."
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- 25 *Energy Efficiency in Buildings: Transforming the Market*, World Business Council for Sustainable Development, <http://www.wbcsd.org/DocRoot/a2BHh5kMFSTPPGSif1fk/transformingthe.market.pdf>, accessed July 21, 2009.

Listening to the South

- 26 The Southeastern Universities Research Association (SURA) is a consortium of over 60 universities in the South. SURA members share a common interest in exploring and developing ways to advance science and to strengthen their institutions and organizations through collaborative efforts.

Listening to the South's State Energy Policies

- 27 This section consists of an analysis of Southern governors' State of the State speeches and official state energy plans. These documents capture the intent of the executive branch towards energy initiatives and serve as markers of present and future activity in this area.
- 28 *Southern Bioenergy Roadmap*, SAFER & University of Florida, 2009, <http://www.saferalliance.net/projects/roadmap.html>.
- 29 Table P3, Energy Production and Consumption Estimates in Trillion Btu by State, 2006, Energy Information Administration, http://www.eia.doe.gov/emeu/states/sep_prod/P3/PDF/P3.pdf.

- 30 *West Virginia Energy Opportunities: A Blueprint for the Future*, http://www.legis.state.wv.us/Reports/Agency_Reports/Agency_Reports_Docs/E08_CY_2008_161.pdf.
- 31 *North Carolina State Energy Plan*, June 2, 2003, Revised Edition January, 2005, <http://www.energync.net/epc/docs/Energy%20Plan%202005.pdf>. New plan currently being developed.
- 32 *Intelligent Energy Choices for Kentucky's Future*, Governor Steve Beshear, <http://governor.ky.gov/NR/rdonlyres/32B6DCAF-57F5-49DC-B9F3-4E889746CBB0/0/20081120energyFactSheet.pdf>.
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State Contributions to Total Southern Energy Production; Southern and non-South Contributions to Total U.S. Energy Production

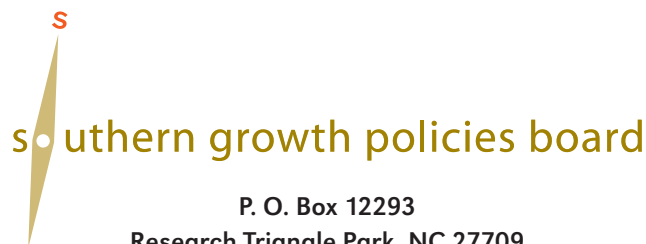
- 42 **Coal:** Energy Information Administration. Table 1. Coal Production and Number of Mines by State and Mine Type, 2007-2006. Retrieved from <http://www.eia.doe.gov/cneaf/coal/page/acr/table1.html>.
- 43 **Petroleum:** Energy Information Administration. Crude Oil Production. Retrieved from http://tonto.eia.doe.gov/dnav/pet/pet_crd_crpdn_adc_mbb1_a.htm.
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- 45 **Nuclear:** Energy Information Administration. Monthly Nuclear Generation by State, 2008. Retrieved from http://www.eia.doe.gov/cneaf/nuclear/page/nuc_generation/gensum.html (see February 2009 link).
- 46 **Hydroelectric:** Energy Information Administration. Table 1.13.B. Net Generation from Hydroelectric (Conventional) Power by State by Sector, Year-to-Date through March 2009 and 2008. Retrieved from <http://www.eia.doe.gov/cneaf/solar.renewables/page/hydroelec/hydroelec.html>.
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- 50 **Natural Gas:** Energy Information Administration. Natural Gas Gross Withdrawal and Production. Retrieved from http://tonto.eia.doe.gov/dnav/ng/ng_prod_sum_a_EPG0_FGW_mmc1_a.htm.
- 51 **Nuclear:** Energy Information Administration. Monthly Nuclear Generation by State, 2008. Retrieved from http://www.eia.doe.gov/cneaf/nuclear/page/nuc_generation/gensum.html (see February 2009 link).
- 52 **Hydroelectric:** Energy Information Administration. Table 1.13.B. Net Generation from Hydroelectric (Conventional) Power by State by Sector, Year-to-Date through March 2009 and 2008. Retrieved from <http://www.eia.doe.gov/cneaf/solar.renewables/page/hydroelec/hydroelec.html>.
- 53 **Renewables:** Energy Information Administration. Table 1.17 Total Renewable Net Generation by Energy Source and State, 2006. Retrieved from <http://www.eia.doe.gov/cneaf/solar.renewables/page/trends/table17.html>.

State Energy Profiles

- 54 **Graphic: 2006 Energy Deficit/2006 Energy Surplus**
Source: Energy Information Administration. Table P3. Energy Production and Consumption Estimates in Trillion Btu by State, 2006. Retrieved from http://www.eia.doe.gov/emeu/states/sep_prod/P3/PDF/P3.pdf.
- 55 **Graphic: 'Cost of Energy Imported from Outside State' or 'Value of Energy Exported from State'**
To determine the cost of imported energy or value of exported energy, the ratio of a state's energy consumption to its energy production was calculated (see 2006 Energy Deficit/Surplus above for source). That ratio was then applied to the state's energy expenditures in 2006 to estimate the cost of importing energy or revenue from exporting energy. This estimate does not account for variations in prices among different forms of energy – rather it assumes an average price for all energy bought and sold.
Source for energy expenditures: Energy Information Administration. Table S1b. Energy Expenditure Estimates by Source 2006. Retrieved from http://www.eia.doe.gov/emeu/states/sep_sum/html/sum_ex_tot.html.

- 56 **Graphic: State Share of U.S. Population, U.S. Energy Consumption, and U.S. Energy Production**
Source for U.S. and state populations: US Bureau of the Census. *2006 American Community Survey*. S0201. Selected Population Profile in the United States. Retrieved from <http://factfinder.census.gov>.
Source for state energy consumption and production: *Energy Information Administration Comprehensive State Energy Profiles*, April 2, 2009 updates. Retrieved from <http://tonto.eia.doe.gov/state/>.
- 57 Ibid.
- 58 Ibid.
- 59 Ibid.
- 60 **Graphic: Original Sources of Consumed Energy**
 Graphic represents the original sources of all energy, including transportation and power generation, consumed within a state, and includes energy sources imported from other states (e.g., coal imported from an outside state that is used to create electricity). State interflows of electricity are not included in the tabulations. Percentages may not add up to 100 due to rounding, and the omission of the category “other” as an energy source.
Source: Energy Information Administration. Table S3. Energy Consumption Estimates by Source, 2006. Retrieved from http://www.eia.doe.gov/emeu/states/sep_sum/html/sum_btu_tot.html.
- 61 **Graphic: Sources of Energy Consumption by End User**
Energy Information Administration Comprehensive State Energy Profiles, April 2, 2009 updates. Retrieved from <http://tonto.eia.doe.gov/state/>.
 Percentages may not add up to 100 due to rounding.
- 62 **Graphic: Projected New Green Jobs**
 New green jobs represent the difference between the number of green jobs existing in a state in 2006 and projected green jobs in that state in 2038 by U.S. Metro Economies: Current and Potential Green Jobs in the U.S. Economy. The report projects growth at the metropolitan level, and may thus neglect changes in green jobs in rural areas. In cases where metropolitan regions cross state lines, all projected growth in green jobs was applied to the state in which the urban center of the metro area is located.
Source: U.S. Metro Economies: Current and Potential Green Jobs in the U.S. Economy. Prepared for The United States Conference of Mayors and the Mayors Climate Protection Center. October 2008.
- 63 **Graphic: Potential Savings From Energy Efficiency, 2009 - 2030**
 To determine potential multiyear savings from energy efficiency, state sales revenues for electricity was obtained for the year 2007. The Electric Power Research Institute estimates that electricity consumption will increase at a rate of 1.07 percent from 2008 to 2030. They also estimate that energy efficiency programs could reduce the growth in consumption from 1.07 percent to .083 percent over the same time period. Electricity consumption was then estimated at growth rates of 1.07 and .083 percent from 2008 to 2030, using 2007 consumption as the baseline figure. Potential savings, then, represent the difference in the cost (in 2007 dollars) of energy between the status quo growth rate in consumption and the growth rate under adopted efficiency measures from 2009 to 2030.
Source for 2007 electricity consumption and sales revenue: Energy Information Administration, Electric Sales, Revenue, and Average Price 2007, Table 3. Revenues for Sales to Bundled and Unbundled Consumers (Including Delivery Service Revenue) by Sector, Census Division, and State. Retrieved from http://www.eia.doe.gov/cneaf/electricity/esr/esr_sum.html.
Source for projected growth rates of electricity consumption: *Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S. (2010 – 2030)*: Executive Summary. EPRI, Palo Alto, CA: 2009. 1018363.

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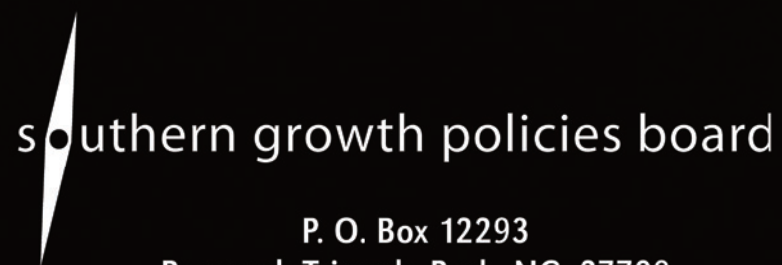
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